



ROSCOSMOS



1  
00:00:06,470 --> 00:00:03,909  
launch command issued for ignition

2  
00:00:08,950 --> 00:00:06,480  
second umbilical tower separates

3  
00:00:11,190 --> 00:00:08,960  
the second umbilical tower has retracted

4  
00:00:13,669 --> 00:00:11,200  
you can see the engines firing now going

5  
00:00:15,190 --> 00:00:13,679  
up to flight speed

6  
00:00:17,029 --> 00:00:15,200  
and liftoff

7  
00:00:19,510 --> 00:00:17,039  
shane kimbrough sergey rizhikov and

8  
00:00:21,750 --> 00:00:19,520  
andre borisenko blasting off from

9  
00:00:31,109 --> 00:00:21,760  
kazakhstan making their way towards the

10  
00:00:35,350 --> 00:00:33,670  
getting good calls from the teams down

11  
00:00:37,990 --> 00:00:35,360  
in baikonur everything looking nominal

12  
00:00:40,709 --> 00:00:38,000  
or normal throughout the flight so far

13  
00:00:44,229 --> 00:00:40,719

the first stage of the soyuz delivering

14

00:00:46,229 --> 00:00:44,239

delivering 930 000 pounds of thrust from

15

00:00:48,310 --> 00:00:46,239

those four strap-on boosters and single

16

00:00:51,110 --> 00:00:48,320

core engine

17

00:00:53,029 --> 00:00:51,120

second things looking fairly calm inside

18

00:00:55,270 --> 00:00:53,039

for the crew members which are now

19

00:00:57,350 --> 00:00:55,280

rocketing over the kazakh step

20

00:00:59,670 --> 00:00:57,360

the first stage measuring 68 feet in

21

00:01:01,430 --> 00:00:59,680

length and 24 feet in diameter it's

22

00:01:03,430 --> 00:01:01,440

going to be burning that liquid fuel for

23

00:01:16,070 --> 00:01:03,440

the first two minutes and six seconds of

24

00:01:21,670 --> 00:01:18,149

already 70 seconds into the flight

25

00:01:24,830 --> 00:01:21,680

velocity of the craft now over 1 100

26  
00:01:29,910 --> 00:01:27,670  
hour next major milestone will be the

27  
00:01:44,550 --> 00:01:29,920  
jettison of the escape tower that coming

28  
00:01:48,310 --> 00:01:46,310  
again you're continuing to get live

29  
00:01:50,630 --> 00:01:48,320  
views inside of the cabin of the soyuz

30  
00:01:52,950 --> 00:01:50,640  
spacecraft already well in excess of

31  
00:01:55,109 --> 00:01:52,960  
1000 miles an hour rocketing towards

32  
00:01:58,630 --> 00:01:55,119  
space

33  
00:02:00,709 --> 00:01:58,640  
one minute 45 seconds since liftoff

34  
00:02:01,749 --> 00:02:00,719  
continuing to get good performance calls

35  
00:02:03,749 --> 00:02:01,759  
from the

36  
00:02:05,990 --> 00:02:03,759  
ground engineers in the launch bunker

37  
00:02:07,109 --> 00:02:06,000  
all of the different parameters on the

38  
00:02:09,109 --> 00:02:07,119

soyuz

39

00:02:20,150 --> 00:02:09,119

rocket continuing to look nominal or

40

00:02:24,390 --> 00:02:22,869

first stage separation

41

00:02:26,470 --> 00:02:24,400

and so the first stage those four

42

00:02:28,710 --> 00:02:26,480

strap-on boosters at this point have

43

00:02:31,670 --> 00:02:28,720

been jettisoned completing their job and

44

00:02:34,229 --> 00:02:31,680

dropping away the soyuz already at an

45

00:02:36,390 --> 00:02:34,239

altitude of about 28 statute miles

46

00:02:40,150 --> 00:02:36,400

traveling in excess of 3

47

00:02:43,350 --> 00:02:40,160

350 miles per hour

48

00:02:47,910 --> 00:02:43,360

again the core stage or the second stage

49

00:02:51,509 --> 00:02:49,910

getting confirmation the launch shroud

50

00:02:53,830 --> 00:02:51,519

has been jettisoned that protective

51  
00:02:55,430 --> 00:02:53,840  
shroud around the soyuz spacecraft so

52  
00:02:57,430 --> 00:02:55,440  
the spacecraft itself you can see some

53  
00:03:00,550 --> 00:02:57,440  
light coming in the window

54  
00:03:03,110 --> 00:03:00,560  
just over borisenko's head launch route

55  
00:03:09,229 --> 00:03:03,120  
so the soyuz now exposed

56  
00:03:16,070 --> 00:03:13,670  
170 seconds and second stage thruster

57  
00:03:19,190 --> 00:03:16,080  
is operating nominally and the crew is

58  
00:03:21,910 --> 00:03:19,200  
feeling good everything looking good

59  
00:03:23,830 --> 00:03:21,920  
with the second stage as we cross the

60  
00:03:25,229 --> 00:03:23,840  
three minute mark soyuz now traveling to

61  
00:03:29,190 --> 00:03:25,239  
the speed of about

62  
00:03:33,990 --> 00:03:31,509  
in the core stage performing as expected

63  
00:03:36,149 --> 00:03:34,000

it's 56 feet in length 13 and a half

64

00:03:39,830 --> 00:03:36,159

feet in diameter that single engine with

65

00:03:43,110 --> 00:03:39,840

four fuel chambers providing between 178

66

00:03:44,550 --> 00:03:43,120

and 222 000 pounds of thrust depending

67

00:03:46,710 --> 00:03:44,560

on where they're at in the earth's

68

00:03:48,390 --> 00:03:46,720

atmosphere getting away from shane

69

00:03:50,309 --> 00:03:48,400

kimbrough there in the right seat making

70

00:03:52,710 --> 00:03:50,319

his first flight into space on this

71

00:03:54,470 --> 00:03:52,720

soyuz spacecraft second stage going to

72

00:03:56,869 --> 00:03:54,480

continue to burn until the four-minute

73

00:03:59,190 --> 00:03:56,879

43 second mark at that point they're

74

00:04:00,869 --> 00:03:59,200

going to do what's known as a hot stage

75

00:04:02,630 --> 00:04:00,879

where the third stage will ignite while

76

00:04:04,550 --> 00:04:02,640

the second's still burning

77

00:04:07,030 --> 00:04:04,560

this is why the soyuz has that small

78

00:04:10,550 --> 00:04:07,040

open grating area in between the second

79

00:04:14,390 --> 00:04:12,470

just past four minutes into the flight

80

00:04:15,910 --> 00:04:14,400

now continuing to get good calls

81

00:04:18,150 --> 00:04:15,920

everything looking normal with this

82

00:04:20,150 --> 00:04:18,160

ascent again the whole process today

83

00:04:22,390 --> 00:04:20,160

going to take about eight minutes 45

84

00:04:27,030 --> 00:04:22,400

seconds from that liftoff until the

85

00:04:33,110 --> 00:04:31,909

250 seconds and ypr are nominal

86

00:05:14,550 --> 00:04:33,120

and

87

00:05:18,070 --> 00:05:14,560

confirmed the core booster now separated

88

00:05:18,790 --> 00:05:18,080

in an altitude of over 105 statute miles

89

00:05:21,029 --> 00:05:18,800

so

90

00:05:23,510 --> 00:05:21,039

that third stage single engine now

91

00:05:26,070 --> 00:05:23,520

providing 67 000 pounds of thrust

92

00:05:27,749 --> 00:05:26,080

burning for four minutes and two seconds

93

00:05:29,830 --> 00:05:27,759

and is going to deliver the soyuz into

94

00:05:49,270 --> 00:05:29,840

its initial orbit

95

00:05:55,670 --> 00:05:52,950

330 seconds and third stage thruster is

96

00:05:58,150 --> 00:05:55,680

operating nominally

97

00:06:05,749 --> 00:05:58,160

everything nominal on board the crew is

98

00:06:05,759 --> 00:06:13,350

seconds nominal flight

99

00:06:45,590 --> 00:06:15,909

everything nominal on board the crew is

100

00:06:50,390 --> 00:06:47,830

it's already been over six and a half

101  
00:06:53,670 --> 00:06:50,400  
minutes since liftoff which happened

102  
00:06:57,189 --> 00:06:53,680  
right on time at 305 am central time 205

103  
00:06:58,950 --> 00:06:57,199  
pm over in baikonur

104  
00:07:01,110 --> 00:06:58,960  
everything with the rocket has gone

105  
00:07:02,950 --> 00:07:01,120  
flawlessly so far the first stage

106  
00:07:05,749 --> 00:07:02,960  
separating on time the second stage

107  
00:07:08,790 --> 00:07:05,759  
separating as well now powered by that

108  
00:07:10,390 --> 00:07:08,800  
single third stage engine

109  
00:07:12,790 --> 00:07:10,400  
this is going to continue to burn until

110  
00:07:19,029 --> 00:07:12,800  
about the eight minute 45 second mark so

111  
00:07:23,270 --> 00:07:20,790  
and then once the third stage delivers

112  
00:07:25,589 --> 00:07:23,280  
the soyuz into its initial orbit the

113  
00:07:28,070 --> 00:07:25,599

module separates it'll execute all those

114

00:07:30,230 --> 00:07:28,080

pre-programmed commands to prepare for

115

00:07:32,230 --> 00:07:30,240

all of its on-orbit operations extending

116

00:07:34,550 --> 00:07:32,240

the solar arrays and all the necessary

117

00:07:35,909 --> 00:07:34,560

navigation and communication antennas on

118

00:07:38,550 --> 00:07:35,919

the board

119

00:07:53,390 --> 00:07:38,560

the crew is feeling good

120

00:07:53,400 --> 00:07:58,469

460 seconds

121

00:07:58,479 --> 00:08:02,790

all parameters are normal

122

00:08:02,800 --> 00:08:07,749

and the crew is feeling good

123

00:08:07,759 --> 00:08:23,309

and everything nominal on board copy

124

00:08:23,319 --> 00:08:27,990

490 seconds

125

00:08:35,829 --> 00:08:31,430

press the operation stable

126  
00:08:35,839 --> 00:08:42,990  
everything nominal

127  
00:08:43,000 --> 00:08:52,829  
510

128  
00:08:52,839 --> 00:09:10,389  
seconds 520 seconds

129  
00:09:13,990 --> 00:09:12,230  
seeing the telltale jolt and getting

130  
00:09:18,710 --> 00:09:14,000  
confirmation the third stage has

131  
00:09:23,269 --> 00:09:20,389  
already getting confirmation the solar

132  
00:09:25,750 --> 00:09:23,279  
arrays have deployed

133  
00:09:31,509 --> 00:09:25,760  
sounding like the navigation antennas as

134  
00:09:35,110 --> 00:09:33,110  
confirmation from the visiting vehicle

135  
00:09:38,389 --> 00:09:35,120  
officer here in houston the solar rays

136  
00:09:43,910 --> 00:09:38,399  
and all antennas now deployed so use

137  
00:09:43,920 --> 00:09:48,310  
11 40.

138  
00:09:54,710 --> 00:09:50,230

right now the spacecraft orbiting at an

139

00:09:56,230 --> 00:09:54,720

altitude of about 143 miles by 118.

140

00:09:57,670 --> 00:09:56,240

this orbit going to be raised

141

00:09:59,910 --> 00:09:57,680

systematically over the course of the

142

00:10:01,590 --> 00:09:59,920

next two days as they begin to chase

143

00:10:03,829 --> 00:10:01,600

down the international space station but

144

00:10:06,470 --> 00:10:03,839

for now three crew members safely in