



1  
00:00:04,789 --> 00:00:02,710  
vehicle to internal power there's the

2  
00:00:07,110 --> 00:00:04,799  
call the vehicle now on internal power

3  
00:00:21,590 --> 00:00:07,120  
the first umbilical tower is separating

4  
00:00:21,600 --> 00:00:30,710  
just about 20 seconds until launch

5  
00:00:34,630 --> 00:00:32,709  
and there's the second umbilical

6  
00:00:36,950 --> 00:00:34,640  
separating that

7  
00:00:37,750 --> 00:00:36,960  
signifies about 30 seconds or so from

8  
00:00:39,750 --> 00:00:37,760  
launch

9  
00:00:42,310 --> 00:00:39,760  
you can see the engine starting to ramp

10  
00:00:45,670 --> 00:00:44,310  
the engines firing now building up to

11  
00:00:48,069 --> 00:00:45,680  
flight speed

12  
00:00:49,910 --> 00:00:48,079  
and liftoff jack fisher and fyodor

13  
00:00:53,750 --> 00:00:49,920

yurchikhin on their way to the

14

00:00:58,389 --> 00:00:56,709

vehicles cleared the tower

15

00:01:01,430 --> 00:00:58,399

getting good first stage performance

16

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

that soyuz delivering about 930 000

17

00:01:15,749 --> 00:01:03,440

pounds of thrust from those four

18

00:01:19,510 --> 00:01:17,670

getting good performance calls nominal

19

00:01:21,680 --> 00:01:19,520

or normal so far for the first stage

20

00:01:25,270 --> 00:01:21,690

continuing to operate well

21

00:01:26,710 --> 00:01:25,280

[Music]

22

00:01:28,789 --> 00:01:26,720

again a pretty clear day there in

23

00:01:32,650 --> 00:01:28,799

baikonur so getting great views of the

24

00:01:45,900 --> 00:01:32,660

rocket as it flies across the kazakh sky

25

00:01:45,910 --> 00:02:01,429

[Music]

26

00:02:04,469 --> 00:02:03,670

it's already 70 seconds since liftoff

27

00:02:06,789 --> 00:02:04,479

the

28

00:02:08,869 --> 00:02:06,799

vehicle already moving at over 1100

29

00:02:10,550 --> 00:02:08,879

miles an hour and continuing to get

30

00:02:12,790 --> 00:02:10,560

those good performance calls you'll hear

31

00:02:14,550 --> 00:02:12,800

yaw pitch and roll basically the

32

00:02:15,990 --> 00:02:14,560

orientation of the rocket wanna hear

33

00:02:17,750 --> 00:02:16,000

nominal and that's what we're hearing

34

00:02:18,550 --> 00:02:17,760

everything going well with the soyuz so

35

00:02:20,550 --> 00:02:18,560

far

36

00:02:22,150 --> 00:02:20,560

on board you can see

37

00:02:24,070 --> 00:02:22,160

the crew member is still doing well

38

00:02:24,949 --> 00:02:24,080

again go to your cheek and on the bottom

39

00:02:27,030 --> 00:02:24,959

there

40

00:02:42,869 --> 00:02:27,040

and then jack nasa's jack fisher on the

41

00:02:46,470 --> 00:02:44,790

and we've gotten confirmation that the

42

00:02:48,070 --> 00:02:46,480

escape tower has been jettisoned and the

43

00:02:50,150 --> 00:02:48,080

first stage has been jettisoned again

44

00:02:52,229 --> 00:02:50,160

those four strap-on boosters have

45

00:02:53,910 --> 00:02:52,239

completed their job dropped away the

46

00:02:56,470 --> 00:02:53,920

vehicle already in an altitude of about

47

00:03:00,229 --> 00:02:56,480

28 statute miles so use rocket traveling

48

00:03:01,990 --> 00:03:00,239

at about 3 350 miles an hour thumbs up

49

00:03:04,229 --> 00:03:02,000

from jack fisher everything continuing

50

00:03:06,790 --> 00:03:04,239

to go great so far with this launch the

51  
00:03:09,110 --> 00:03:06,800  
vehicle under the power now of the core

52  
00:03:11,990 --> 00:03:09,120  
stage or the second stage and that's

53  
00:03:14,630 --> 00:03:12,000  
going to continue to fire until about

54  
00:03:15,509 --> 00:03:14,640  
four minutes and 48 seconds into the

55  
00:03:17,430 --> 00:03:15,519  
flight

56  
00:03:20,070 --> 00:03:17,440  
so another two minutes and change from

57  
00:03:25,430 --> 00:03:22,550  
second stage thrusters are operating

58  
00:03:29,270 --> 00:03:27,110  
getting confirmation the launch round

59  
00:03:32,590 --> 00:03:29,280  
has been jettisoned so the soyuz vehicle

60  
00:03:32,590 --> 00:03:32,600  
now exposed

61  
00:03:35,509 --> 00:03:33,670  
[Music]

62  
00:03:37,670 --> 00:03:35,519  
everything going right per the timeline

63  
00:03:39,430 --> 00:03:37,680

so far with today's launch second stage

64

00:03:40,470 --> 00:03:39,440

continuing to perform

65

00:03:44,470 --> 00:03:40,480

great

66

00:03:47,990 --> 00:03:46,149

just past the three-minute mark since

67

00:03:49,509 --> 00:03:48,000

liftoff

68

00:03:54,789 --> 00:03:49,519

at this point the soyuz already

69

00:03:59,589 --> 00:03:57,670

and we have the controlled

70

00:04:01,670 --> 00:03:59,599

you can see sunlight pouring in now from

71

00:04:03,270 --> 00:04:01,680

a window just over jack fisher's

72

00:04:04,789 --> 00:04:03,280

shoulder

73

00:04:10,390 --> 00:04:04,799

that now possible with that launch

74

00:04:14,630 --> 00:04:12,630

second stage thrusters are operating

75

00:04:16,789 --> 00:04:14,640

everything's performing as expected that

76

00:04:19,349 --> 00:04:16,799

core stage of the soyuz 56 feet in

77

00:04:21,749 --> 00:04:19,359

length 13 and a half in diameter has a

78

00:04:23,350 --> 00:04:21,759

single engine with four fuel chambers

79

00:04:24,870 --> 00:04:23,360

and provides between one hundred and

80

00:04:27,110 --> 00:04:24,880

seventy eight thousand and two hundred

81

00:04:29,830 --> 00:04:27,120

and twenty two thousand pounds of thrust

82

00:04:31,510 --> 00:04:29,840

depending on the altitude of the vehicle

83

00:04:34,390 --> 00:04:31,520

and it burns for about three minutes and

84

00:04:37,110 --> 00:04:34,400

28 seconds it's going to burn until the

85

00:04:39,189 --> 00:04:37,120

4 minute 43 second mark and then it'll

86

00:04:40,550 --> 00:04:39,199

use what's known as a hot stage

87

00:04:42,310 --> 00:04:40,560

technique

88

00:04:44,230 --> 00:04:42,320

so the third stage will actually ignite

89

00:04:47,030 --> 00:04:44,240

while the second's still burning that's

90

00:04:48,870 --> 00:04:47,040

why again the soyuz rocket has that open

91

00:04:50,950 --> 00:04:48,880

lattice-like structure in between the

92

00:04:53,030 --> 00:04:50,960

second and third stages and we'll be

93

00:04:55,110 --> 00:04:53,040

seeing that shortly continuing to get

94

00:05:05,150 --> 00:04:55,120

good calls four minutes 12 seconds and

95

00:05:05,160 --> 00:05:23,029

260 seconds

96

00:05:23,039 --> 00:05:33,110

car too

97

00:05:37,990 --> 00:05:35,670

just got confirmation the second stage

98

00:05:39,590 --> 00:05:38,000

separated from the soyuz rocket the

99

00:05:42,710 --> 00:05:39,600

third stage firing

100

00:05:46,710 --> 00:05:42,720

separation of the second stage yes we

101  
00:05:51,029 --> 00:05:48,469  
and confirmation the third stage engine

102  
00:05:54,150 --> 00:05:51,039  
has ignited and now powering the soyuz

103  
00:05:55,990 --> 00:05:54,160  
into its preliminary orbit

104  
00:05:59,590 --> 00:05:56,000  
that core booster separates at an

105  
00:06:01,830 --> 00:05:59,600  
altitude of about 105 miles and the

106  
00:06:04,390 --> 00:06:01,840  
soyuz now propelled by the single engine

107  
00:06:06,309 --> 00:06:04,400  
of the soyuz's third stage providing

108  
00:06:08,150 --> 00:06:06,319  
about 67 thousand pounds of thrust and

109  
00:06:14,990 --> 00:06:08,160  
it's going to burn for the next four

110  
00:06:15,000 --> 00:06:19,590  
330 seconds

111  
00:06:45,870 --> 00:06:22,390  
third stage thrusters operating

112  
00:06:45,880 --> 00:06:53,030  
360 seconds

113  
00:07:00,830 --> 00:06:59,589

[Music]

114

00:07:06,469 --> 00:07:00,840

is

115

00:07:08,469 --> 00:07:06,479

copy

116

00:07:11,430 --> 00:07:08,479

getting reports the crew feeling good

117

00:07:13,110 --> 00:07:11,440

six minutes 30 seconds since liftoff

118

00:07:16,350 --> 00:07:13,120

everything continuing to go great again

119

00:07:18,710 --> 00:07:16,360

the so uses third stage now powering up

120

00:07:21,430 --> 00:07:18,720

390 seconds it's going to continue to

121

00:07:24,230 --> 00:07:21,440

operate until 8 minutes and 45 seconds

122

00:07:26,070 --> 00:07:24,240

post liftoff so another two minutes

123

00:07:27,749 --> 00:07:26,080

under the third stage and then the

124

00:07:29,990 --> 00:07:27,759

rocket's job will be done and the

125

00:07:55,309 --> 00:07:30,000

spacecraft will be in its preliminary

126  
00:07:55,319 --> 00:08:00,070  
430 seconds

127  
00:08:00,080 --> 00:08:14,950  
third stage thruster operating nominally

128  
00:08:18,950 --> 00:08:16,469  
again all the calls everything going

129  
00:08:21,350 --> 00:08:18,960  
well so far with this morning's launch

130  
00:08:22,710 --> 00:08:21,360  
keep your eye on the dog floating just

131  
00:08:25,270 --> 00:08:22,720  
in front of fyodor your cheek and again

132  
00:08:26,710 --> 00:08:25,280  
that's going to be our zero g indicator

133  
00:08:28,550 --> 00:08:26,720  
so once they're in their preliminary

134  
00:08:30,150 --> 00:08:28,560  
orbit and they start experiencing

135  
00:08:32,310 --> 00:08:30,160  
microgravity you'll see that start to

136  
00:08:33,909 --> 00:08:32,320  
float just like everything else inside

137  
00:08:36,230 --> 00:08:33,919  
the vehicle including the crew members

138  
00:08:39,589 --> 00:08:36,240

themselves will shortly we're seven

139

00:08:42,870 --> 00:08:39,599

hours 54 minutes since launch

140

00:08:47,350 --> 00:08:42,880

vehicle traveling in excess of 13 500

141

00:08:50,870 --> 00:08:49,430

again as a reminder once they are

142

00:08:52,870 --> 00:08:50,880

delivered into orbit a series of

143

00:08:56,470 --> 00:08:52,880

commands that are pre-programmed we'll

144

00:09:02,630 --> 00:08:56,480

execute and all the antennas will deploy

145

00:09:17,190 --> 00:09:04,310

nominal third stage should be cutting

146

00:09:17,200 --> 00:09:33,990

everything is nominal

147

00:09:38,389 --> 00:09:36,070

and with the telltale jolt you can see

148

00:09:40,389 --> 00:09:38,399

the third stage has cut off and

149

00:09:42,310 --> 00:09:40,399

separated there's a great view of that

150

00:09:44,389 --> 00:09:42,320

dog you can see it's floating now so the

