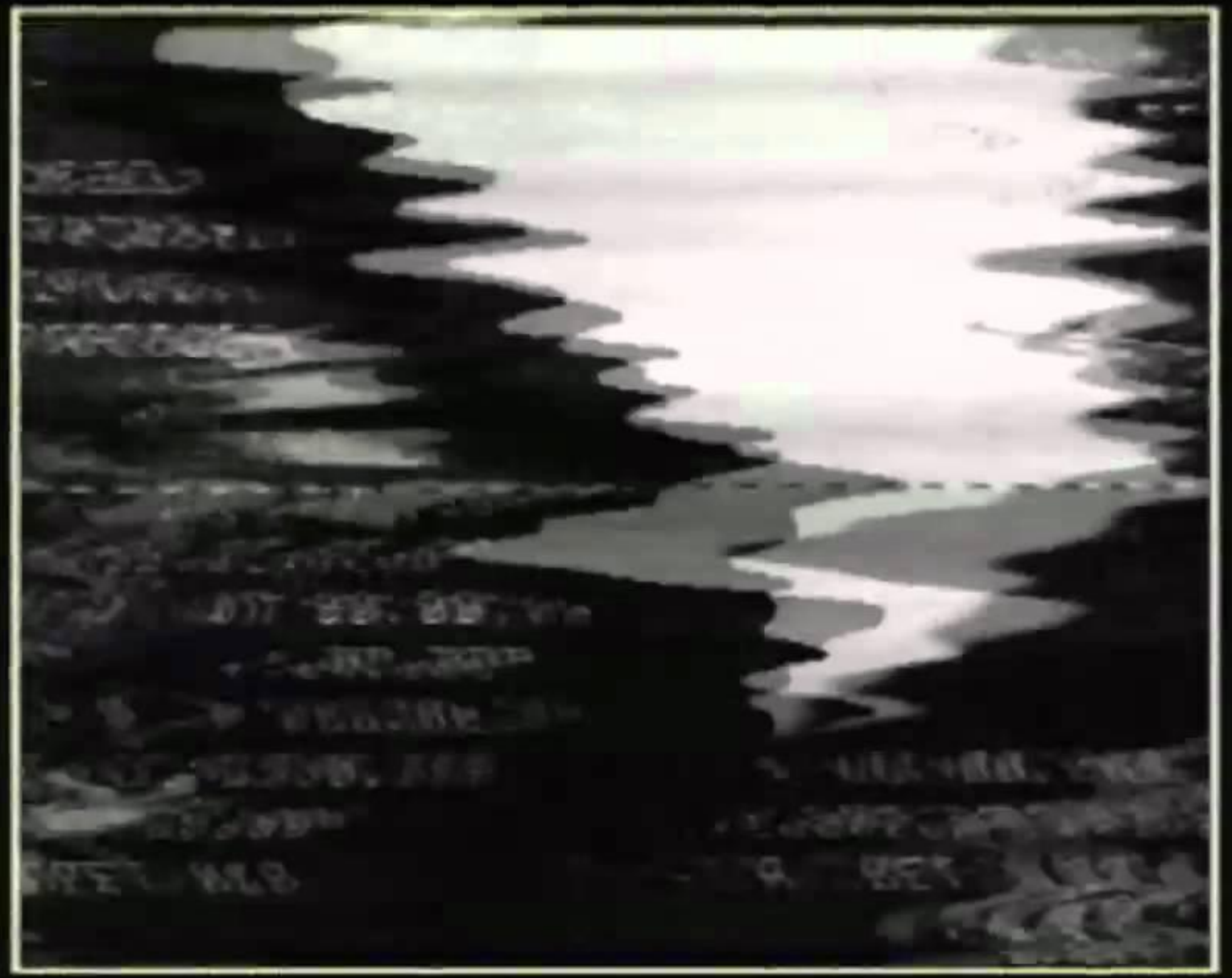

1
00:00:38,069 --> 00:00:02,470
less than 30 seconds away from physical

2
00:00:38,079 --> 00:00:50,310
so

3
00:00:50,320 --> 00:01:23,030
confirmed

4
00:01:28,149 --> 00:01:24,550
everything looking good in the initial

5
00:01:29,590 --> 00:01:28,159
separation of the soyuz tma-20

6
00:01:32,390 --> 00:01:29,600
no fod

7
00:01:34,390 --> 00:01:32,400
visible at the docking interface

8
00:01:35,910 --> 00:01:34,400
kendrath coleman and nespoli bidding

9
00:01:40,310 --> 00:01:35,920
farewell to the international space

10
00:01:43,510 --> 00:01:40,320
station after 157 days on board

11
00:01:47,350 --> 00:01:46,069
undocking occurring at 4 35 pm central

12
00:01:49,030 --> 00:01:47,360
time

13
00:01:51,590 --> 00:01:49,040

as the international space station and

14
00:02:21,270 --> 00:01:51,600
endeavor pass 220 miles over eastern

15
00:02:21,280 --> 00:02:25,350
inward

16
00:02:30,309 --> 00:02:26,229
yes

17
00:02:30,319 --> 00:02:47,670
program 3 has been activated

18
00:02:56,630 --> 00:02:49,750
about 40 seconds away from the first of

19
00:03:01,270 --> 00:02:58,790
two minutes have elapsed separation is

20
00:03:05,990 --> 00:03:02,149
all right

21
00:03:16,710 --> 00:03:06,000
observing the docking assembly

22
00:03:16,720 --> 00:03:22,470
reserved

23
00:03:22,480 --> 00:03:38,789
30.

24
00:03:38,799 --> 00:03:56,070
10 seconds

25
00:03:59,110 --> 00:03:57,830
the first of two separation burns

26
00:04:02,550 --> 00:03:59,120
underway

27
00:04:04,390 --> 00:04:02,560
can drop tf at the controls

28
00:04:06,550 --> 00:04:04,400
five days after the arrival of the space

29
00:04:08,550 --> 00:04:06,560
shuttle endeavour the soyuz tma-20

30
00:04:19,110 --> 00:04:08,560
departs heading for a landing in south

31
00:04:23,110 --> 00:04:20,870
there's your unprecedented portrait at

32
00:04:25,189 --> 00:04:23,120
least from station cameras

33
00:04:27,270 --> 00:04:25,199
the space shuttle endeavor and the final

34
00:04:29,510 --> 00:04:27,280
days of its final mission

35
00:04:32,790 --> 00:04:29,520
and the soyuz tma-20 against the limb of

36
00:04:37,670 --> 00:04:34,870
moscow you can

37
00:04:51,350 --> 00:04:37,680
turn off the light

38
00:04:51,360 --> 00:05:00,230

continuing back out

39
00:05:04,790 --> 00:05:01,909
we should be arriving at the station

40
00:05:07,270 --> 00:05:04,800
keeping point about two minutes from now

41
00:05:09,350 --> 00:05:07,280
at which point uh kondratyev will

42
00:05:11,510 --> 00:05:09,360
put the brakes on basically

43
00:05:14,550 --> 00:05:11,520
and begin a period of station keeping at

44
00:05:17,110 --> 00:05:14,560
a distance of about 180 meters enabling

45
00:05:19,749 --> 00:05:17,120
paulo nespoli to unstrap from his seat

46
00:05:21,189 --> 00:05:19,759
on the left side of the descent module

47
00:05:23,029 --> 00:05:21,199
and open the hatch back up to the

48
00:05:25,029 --> 00:05:23,039
habitation module to make his way in

49
00:05:27,110 --> 00:05:25,039
with a digital camera and a high

50
00:05:33,029 --> 00:05:27,120
definition camera for the start of

51
00:05:42,870 --> 00:05:35,590
line of sight

52
00:05:48,870 --> 00:05:45,350
this view from the external camera on

53
00:06:02,710 --> 00:05:52,230
now 155 meters away from the rassvet

54
00:06:02,720 --> 00:06:14,070
do you need to see this one

55
00:06:18,790 --> 00:06:16,150
space shuttle endeavour in view on the

56
00:06:21,110 --> 00:06:18,800
lower right side of your picture again

57
00:06:23,909 --> 00:06:21,120
this is the engineering overlay view

58
00:06:26,629 --> 00:06:23,919
that russian flight controllers use

59
00:06:46,790 --> 00:06:26,639
for data as the soyuz separates from the

60
00:06:50,870 --> 00:06:49,430
once uh the soyuz vehicle reaches its

61
00:06:52,629 --> 00:06:50,880
station keeping position the

62
00:06:57,909 --> 00:06:52,639
international space station will return

63
00:07:02,870 --> 00:07:00,070

paolo nespoli is expected to begin his

64
00:07:04,870 --> 00:07:02,880
photography activities

65
00:07:06,870 --> 00:07:04,880
and his imagery acquisition with a high

66
00:07:10,469 --> 00:07:06,880
definition camera about eight and a half

67
00:07:13,189 --> 00:07:11,189
okay

68
00:07:14,309 --> 00:07:13,199
sm as reference

69
00:07:17,670 --> 00:07:14,319
one

70
00:07:20,150 --> 00:07:17,680
cell and a quarter at that point we are

71
00:07:51,749 --> 00:07:20,160
going to start breaking

72
00:07:58,390 --> 00:07:55,589
standing by for kondratyev to initiate

73
00:08:00,309 --> 00:07:58,400
impulses in his hand controller that

74
00:08:04,230 --> 00:08:00,319
will initiate the braking for station

75
00:08:04,240 --> 00:08:08,390
continuing separation

76
00:08:08,400 --> 00:08:21,510
okay

77
00:08:21,520 --> 00:08:37,269
what is the approximate range

78
00:08:42,149 --> 00:08:40,389
170 meters separating soyuz from the

79
00:08:45,110 --> 00:08:42,159
international space station again this

80
00:08:47,190 --> 00:08:45,120
view from the soyuz camera

81
00:08:49,269 --> 00:08:47,200
an external black and white engineering

82
00:08:51,430 --> 00:08:49,279
camera but this approximates the same

83
00:08:53,030 --> 00:08:51,440
view that paulo nespoli will be getting

84
00:08:54,790 --> 00:08:53,040
when he makes his way into the upper

85
00:09:02,389 --> 00:08:54,800
portion of the soyuz the habitation

86
00:09:06,829 --> 00:09:04,790
let's wait a little more

87
00:09:08,389 --> 00:09:06,839
let's wait until we reach

88
00:09:14,070 --> 00:09:08,399

89
00:09:19,990 --> 00:09:17,509
180 meters separating soyuz from the

90
00:09:24,150 --> 00:09:20,000
station breaking underway station

91
00:09:24,160 --> 00:09:31,269
okay

92
00:09:31,279 --> 00:09:49,430
range is 180.

93
00:09:53,269 --> 00:09:51,190
its maneuver back into an undocking

94
00:09:54,949 --> 00:09:53,279
attitude and the soyuz now beginning a

95
00:09:56,790 --> 00:09:54,959
roll maneuver

96
00:09:59,350 --> 00:09:56,800
this essentially will place the

97
00:10:01,269 --> 00:09:59,360
so-called blister window in the upper

98
00:10:02,470 --> 00:10:01,279
portion of the soyuz and the habitation

99
00:10:05,670 --> 00:10:02,480
module

100
00:10:08,150 --> 00:10:05,680
through which uh paulo nespoli will be

101
00:10:10,949 --> 00:10:08,160
using as his vantage point for digital

102
00:10:12,630 --> 00:10:10,959
photography and hd video

103
00:10:14,470 --> 00:10:12,640
acquisition

104
00:10:17,110 --> 00:10:14,480
this puts the soyuz and the station in

105
00:10:19,670 --> 00:10:17,120
the proper orientations against one

106
00:10:21,269 --> 00:10:19,680
another the international space station

107
00:10:23,430 --> 00:10:21,279
then will begin a maneuver to the

108
00:10:26,710 --> 00:10:23,440
photography attitude about 11 minutes

109
00:10:29,590 --> 00:10:26,720
from now please repeat

110
00:10:31,110 --> 00:10:29,600
program three demanding

111
00:10:33,590 --> 00:10:31,120
issue

112
00:10:37,829 --> 00:10:33,600
five one more time

113
00:10:37,839 --> 00:10:44,630

five has been issued

114
00:10:49,990 --> 00:10:46,949
momentarily as soon as station keeping

115
00:10:52,069 --> 00:10:50,000
is initiated nestfully will unstrap from

116
00:10:53,590 --> 00:10:52,079
his left seat in the descent module the

117
00:10:55,670 --> 00:10:53,600
crew compartment

118
00:10:58,230 --> 00:10:55,680
and make his way uh

119
00:11:00,550 --> 00:10:58,240
up into the habitation module

120
00:11:02,470 --> 00:11:00,560
the hatch between the habitation module

121
00:11:03,990 --> 00:11:02,480
and the descent module will have to be

122
00:11:07,269 --> 00:11:04,000
closed once again

123
00:11:08,630 --> 00:11:07,279
at the end of this imagery activity

124
00:11:10,949 --> 00:11:08,640
and leak checks will have to be

125
00:11:22,790 --> 00:11:10,959
reinitiated both for the hatch and for

126
00:11:22,800 --> 00:11:26,550
how many

127
00:11:28,550 --> 00:11:27,509
cells

128
00:11:34,870 --> 00:11:28,560
are

129
00:11:40,550 --> 00:11:37,670
a lot about 5.

130
00:11:40,560 --> 00:11:46,710
let's move

131
00:12:22,629 --> 00:11:50,150
and also please check pressure in essa

132
00:12:29,190 --> 00:12:26,389
the international space station endeavor

133
00:12:31,910 --> 00:12:29,200
and the soyuz tma-20 flying south of the

134
00:12:32,790 --> 00:12:31,920
aleutian islands 220 miles above the

135
00:12:35,110 --> 00:12:32,800
earth

136
00:12:51,030 --> 00:12:35,120
moving from northwest to southeast

137
00:12:51,040 --> 00:12:55,110
pressure in the habitation module

138
00:12:55,120 --> 00:13:00,150

813 especially

139
00:13:00,160 --> 00:13:14,310
range is 200.000

140
00:13:14,320 --> 00:13:23,910
and it lost power

141
00:13:29,590 --> 00:13:26,949
you can find the equilibrium position by

142
00:13:32,470 --> 00:13:29,600
operating the route

143
00:13:33,670 --> 00:13:32,480
and then maintain that position so that

144
00:13:35,350 --> 00:13:33,680
the

145
00:13:36,550 --> 00:13:35,360
overlay

146
00:13:37,750 --> 00:13:36,560
distance

147
00:13:44,790 --> 00:13:37,760
between

148
00:13:44,800 --> 00:14:09,110
and it's stable i follow

149
00:14:14,790 --> 00:14:12,790
put it in the container don't forget to

150
00:14:17,670 --> 00:14:14,800
take the memory card

151
00:14:19,509 --> 00:14:17,680
okay we copy

152
00:14:21,829 --> 00:14:19,519
last minute reminder by russian flight

153
00:14:24,790 --> 00:14:21,839
controllers to nespoli and to make sure

154
00:14:27,269 --> 00:14:24,800
that he removes the cards from the high

155
00:14:29,030 --> 00:14:27,279
definition camera and the digital camera

156
00:14:30,629 --> 00:14:29,040
that he used for about 20 minutes of

157
00:14:33,590 --> 00:14:30,639
imagery acquisition

158
00:14:35,509 --> 00:14:33,600
during this unprecedented activity to

159
00:14:37,110 --> 00:14:35,519
capture the space shuttle endeavour and

160
00:14:40,069 --> 00:14:37,120
the other elements of the international

161
00:14:42,310 --> 00:14:40,079
space station orbiting 220 miles above

162
00:14:44,389 --> 00:14:42,320
the earth nespoli will make his way back

163
00:14:46,949 --> 00:14:44,399

into the descent module close the hatch

164
00:14:47,990 --> 00:14:46,959
above him to the orbital or habitation

165
00:14:50,150 --> 00:14:48,000
module

166
00:14:52,389 --> 00:14:50,160
at which point the crew will reinitiate

167
00:14:54,389 --> 00:14:52,399
a second series of leak checks to make

168
00:14:56,389 --> 00:14:54,399
sure that there's an airtight seal

169
00:14:58,870 --> 00:14:56,399
between those two compartments since

170
00:15:03,189 --> 00:14:58,880
they are pyrotechnically uh separated

171
00:15:08,230 --> 00:15:06,310
a few minutes before atmospheric entry