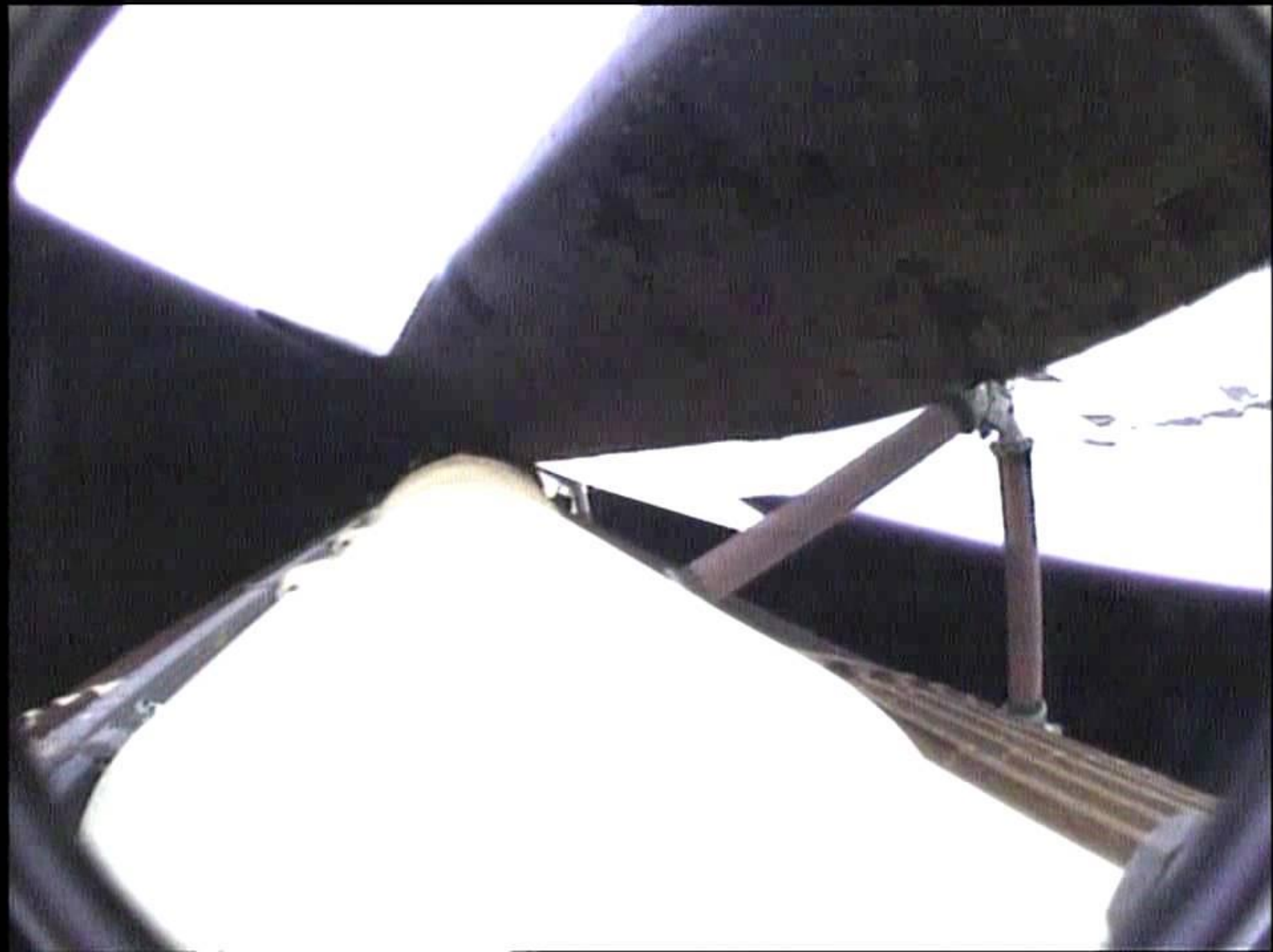

1
00:00:18,550 --> 00:00:16,230
for the final launch of endeavor

2
00:00:29,349 --> 00:00:18,560
expanding our knowledge on expanding our

3
00:00:34,870 --> 00:00:32,470
endeavor space to

4
00:00:37,590 --> 00:00:34,880
pull over onto its uh back the roll

5
00:00:40,389 --> 00:00:37,600
program underway as endeavor begins a

6
00:00:58,709 --> 00:00:40,399
heads down position on course for a 51.6

7
00:01:02,150 --> 00:01:00,630
three engines now throttling down as

8
00:01:03,830 --> 00:01:02,160
endeavor

9
00:01:05,670 --> 00:01:03,840
passes through the area of maximum

10
00:01:08,870 --> 00:01:05,680
dynamic pressure on the vehicle in the

11
00:01:17,190 --> 00:01:13,109
approaching one minute into the flight

12
00:01:22,630 --> 00:01:19,910
roger go ahead throttle up

13
00:01:24,950 --> 00:01:22,640

endeavors three main engines now back at

14
00:01:27,350 --> 00:01:24,960
full throttle all three engines in good

15
00:01:31,510 --> 00:01:27,360
shape endeavors already

16
00:01:33,590 --> 00:01:31,520
traveling 1300 miles per hour

17
00:01:35,350 --> 00:01:33,600
at an altitude of 11 miles downrange

18
00:01:42,230 --> 00:01:35,360
from the kennedy space center now 12

19
00:01:47,749 --> 00:01:46,230
at liftoff endeavor fully fueled

20
00:01:49,990 --> 00:01:47,759
weighed four and a half million pounds

21
00:01:52,469 --> 00:01:50,000
it's already lost half that weight in

22
00:01:54,469 --> 00:01:52,479
propellant now burned that weight

23
00:01:56,870 --> 00:01:54,479
next event is burnout and separation of

24
00:01:59,190 --> 00:01:56,880
the twin solid rocket boosters

25
00:02:00,870 --> 00:01:59,200
that up coming here shortly at the

26
00:02:03,590 --> 00:02:00,880
two minute three second point those

27
00:02:11,830 --> 00:02:03,600
boosters are burning 11 000 pounds of

28
00:02:29,750 --> 00:02:15,190
and standing by for separation of the

29
00:02:33,910 --> 00:02:31,750
the onboard guidance system has done its

30
00:02:36,710 --> 00:02:33,920
job of settling out any dispersions

31
00:02:37,589 --> 00:02:36,720
introduced at burst booster separation

32
00:02:40,390 --> 00:02:37,599
the

33
00:02:43,670 --> 00:02:40,400
orbiter is now traveling 3 200 miles per

34
00:02:47,110 --> 00:02:43,680
hour downrange 50 miles altitude 37

35
00:02:49,110 --> 00:02:47,120
miles all systems in good shape

36
00:02:51,270 --> 00:02:49,120
three good uh hydraulic systems

37
00:02:53,350 --> 00:02:51,280
auxiliary power units and fuel cells the

38
00:03:01,430 --> 00:02:53,360

fuel cells providing electrical power to

39
00:03:05,030 --> 00:03:02,949
endeavour can reach

40
00:03:06,869 --> 00:03:05,040
a towel site in the event of a single

41
00:03:08,949 --> 00:03:06,879
engine failure however all three are in

42
00:03:11,270 --> 00:03:08,959
good shape space shuttle endeavour

43
00:03:13,030 --> 00:03:11,280
sailing into fair winds on its final

44
00:03:15,430 --> 00:03:13,040
historic voyage

45
00:03:18,470 --> 00:03:15,440
this view looking down the external fuel

46
00:03:20,630 --> 00:03:18,480
tank the orbiter there on the top as

47
00:03:21,670 --> 00:03:20,640
endeavor continues to power its way into

48
00:03:24,309 --> 00:03:21,680
orbit

49
00:03:27,830 --> 00:03:24,319
traveling 4 000 miles per hour downrange

50
00:03:54,869 --> 00:03:27,840
90 miles altitude 50 miles three minutes

51
00:03:59,990 --> 00:03:57,830
all three main engines still looking in

52
00:04:09,190 --> 00:04:00,000
in good shape hydraulic systems and

53
00:04:09,200 --> 00:04:13,270
endeavor negative return

54
00:04:17,749 --> 00:04:15,990
roger negative return

55
00:04:19,670 --> 00:04:17,759
endeavour can no longer return to the

56
00:04:21,509 --> 00:04:19,680
kennedy space center in the event of an

57
00:04:23,909 --> 00:04:21,519
engine failure now but all three are

58
00:04:26,150 --> 00:04:23,919
still in good shape as are all the other

59
00:04:27,830 --> 00:04:26,160
systems aboard the orbiter quiet here in

60
00:04:30,070 --> 00:04:27,840
mission control as a team of flight

61
00:04:31,270 --> 00:04:30,080
controllers watches watches over all of

62
00:04:33,270 --> 00:04:31,280
the systems

63
00:04:36,469 --> 00:04:33,280

four minutes 20 seconds into the flight

64
00:04:39,030 --> 00:04:36,479
endeavors traveling 5500 miles per hour

65
00:04:43,110 --> 00:04:39,040
altitude now 63 miles traveling

66
00:04:50,550 --> 00:04:43,120
downrange 186 miles or about 335

67
00:04:54,469 --> 00:04:52,629
environmental and control systems

68
00:04:57,270 --> 00:04:54,479
officer here reporting a good flash

69
00:04:59,110 --> 00:04:57,280
evaporator system providing cooling to

70
00:05:00,710 --> 00:04:59,120
all of the avionics equipment aboard the

71
00:05:02,310 --> 00:05:00,720
vehicle

72
00:05:04,150 --> 00:05:02,320
traveling into space on the forward

73
00:05:05,830 --> 00:05:04,160
flight deck as commander mark kelly and

74
00:05:07,350 --> 00:05:05,840
pilot greg johnson

75
00:05:09,830 --> 00:05:07,360
between and behind them as flight

76
00:05:11,990 --> 00:05:09,840
engineer roberto vittori and rounding

77
00:05:15,749 --> 00:05:12,000
out the flight deck crew as mike fink

78
00:05:19,510 --> 00:05:17,749
roger press the atm

79
00:05:21,270 --> 00:05:19,520
endeavor can reach orbit on two engines

80
00:05:23,909 --> 00:05:21,280
should one fail at this point however

81
00:05:25,189 --> 00:05:23,919
all three are still performing as

82
00:05:27,189 --> 00:05:25,199
planned

83
00:05:30,150 --> 00:05:27,199
down on the mid deck of endeavor drew

84
00:05:31,909 --> 00:05:30,160
feustel and greg chamatov feustel headed

85
00:05:34,870 --> 00:05:31,919
to the international space station for

86
00:05:36,950 --> 00:05:34,880
the first time victorian fink making

87
00:05:39,029 --> 00:05:36,960
their first voyage on the space shuttle

88
00:05:40,950 --> 00:05:39,039

after flying to the international space

89
00:05:48,150 --> 00:05:40,960
station aboard

90
00:05:55,430 --> 00:05:52,230
endeavor single engine ops 3.

91
00:05:59,350 --> 00:05:57,110
that call indicates that endeavor could

92
00:06:01,749 --> 00:05:59,360
reach a transatlantic abort site on one

93
00:06:03,430 --> 00:06:01,759
engine if it lost two of the three

94
00:06:06,309 --> 00:06:03,440
although all three are still in good

95
00:06:13,189 --> 00:06:06,319
shape five minutes 50 seconds into the

96
00:06:24,629 --> 00:06:15,830
endeavor press domico and single engine

97
00:06:28,790 --> 00:06:26,390
several calls there endeavour can reach

98
00:06:30,309 --> 00:06:28,800
a safe orbit on two engines now the

99
00:06:32,230 --> 00:06:30,319
guidance system is controlling the

100
00:06:33,350 --> 00:06:32,240
engines to roll endeavor to a heads up

101
00:06:34,710 --> 00:06:33,360
position

102
00:06:36,309 --> 00:06:34,720
to optimize the air-to-ground

103
00:06:42,710 --> 00:06:36,319
communications through the satellite

104
00:06:46,629 --> 00:06:44,710
flight controllers reporting to flight

105
00:06:50,629 --> 00:06:46,639
director richard jones are in good shape

106
00:06:58,189 --> 00:06:53,350
copy shutdown plan is nominal

107
00:06:58,199 --> 00:07:09,029
rogers go for the pitch

108
00:07:09,039 --> 00:07:13,909
endeavor single engine press 104

109
00:07:18,550 --> 00:07:16,469
roger single engine press 104 endeavor

110
00:07:20,469 --> 00:07:18,560
can reach orbit on one engine should two

111
00:07:23,430 --> 00:07:20,479
fail however all three are still in good

112
00:07:25,270 --> 00:07:23,440
shape the three main engines are flowing

113
00:07:27,749 --> 00:07:25,280

fuel through their

114
00:07:29,589 --> 00:07:27,759
power systems at a rate equivalent to

115
00:07:33,909 --> 00:07:29,599
draining an average backyard swimming

116
00:07:39,350 --> 00:07:37,029
seven minutes 20 seconds into the flight

117
00:07:42,309 --> 00:07:39,360
altitude 64 miles downrange from the

118
00:07:45,270 --> 00:07:42,319
kennedy space center 630 miles

119
00:07:46,629 --> 00:07:45,280
endeavors traveling 13 500 miles per

120
00:07:48,629 --> 00:07:46,639
hour

121
00:07:51,589 --> 00:07:48,639
we're now seeing uh throttling on the

122
00:07:53,589 --> 00:07:51,599
three main engines to maintain the uh 3g

123
00:08:10,790 --> 00:07:53,599
or three times gravity load on the

124
00:08:15,670 --> 00:08:13,990
engines at uh 82 percent of rated thrust

125
00:08:17,189 --> 00:08:15,680
eight minutes into the flight the next

126
00:08:19,990 --> 00:08:17,199
uh

127
00:08:42,550 --> 00:08:20,000
activity is a main engine cutoff that's

128
00:08:49,110 --> 00:08:44,230
and main engine cutoff has been

129
00:08:57,590 --> 00:08:51,110
flight dynamics reporting a nominal main

130
00:08:57,600 --> 00:09:08,630
and separation from the external tank

131
00:09:13,430 --> 00:09:11,110
endeavors commander mark kelly now uh

132
00:09:15,509 --> 00:09:13,440
firing the thruster jets to position the

133
00:09:17,990 --> 00:09:15,519
orbiter for uh photography of the