



1  
00:00:10,310 --> 00:00:03,830  
t-minus 38 seconds and counting coming

2  
00:00:16,630 --> 00:00:13,830  
cls is go for auto sequence start

3  
00:00:18,390 --> 00:00:16,640  
t-minus 25 seconds discovery's onboard

4  
00:00:20,390 --> 00:00:18,400  
computers have primary control of the

5  
00:00:25,189 --> 00:00:20,400  
vehicle's critical functions

6  
00:00:28,390 --> 00:00:26,950  
t minus 15 seconds and the sound

7  
00:00:30,470 --> 00:00:28,400  
suppression water system has been

8  
00:00:35,510 --> 00:00:30,480  
activated

9  
00:00:38,470 --> 00:00:37,590  
three engines up and ready

10  
00:00:39,350 --> 00:00:38,480  
three

11  
00:00:40,470 --> 00:00:39,360  
two

12  
00:00:42,869 --> 00:00:40,480  
one

13  
00:00:45,190 --> 00:00:42,879

zero booster ignition

14

00:00:47,190 --> 00:00:45,200  
and liftoff of discovery

15

00:00:53,069 --> 00:00:47,200  
blazing a trail to scientific

16

00:00:53,079 --> 00:01:01,510  
station discovery

17

00:01:04,789 --> 00:01:03,110  
space shuttle discovery is rolling into

18

00:01:09,350 --> 00:01:04,799  
a heads down position putting it on

19

00:01:11,190 --> 00:01:09,360  
course for 51.6 degree 136 by 36 statute

20

00:01:21,910 --> 00:01:11,200  
orbit and eventually the international

21

00:01:25,350 --> 00:01:23,830  
discovery's three liquid-fueled main

22

00:01:26,870 --> 00:01:25,360  
engines are now throttling down to

23

00:01:28,950 --> 00:01:26,880  
reduce stress on the shuttle as it

24

00:01:31,510 --> 00:01:28,960  
travels through the area of maximum

25

00:01:35,590 --> 00:01:31,520  
dynamic pressure discovery is already at

26

00:01:37,429 --> 00:01:35,600

an altitude of 4.7 miles or 26

27

00:01:47,350 --> 00:01:37,439

500 feet

28

00:01:50,710 --> 00:01:49,030

traveling 1 000 miles per hour

29

00:01:52,230 --> 00:01:50,720

discovery's engines are now throttled

30

00:02:04,310 --> 00:01:52,240

back up and performing at full cut

31

00:02:07,190 --> 00:02:05,590

i had lived off the shuttle weighed more

32

00:02:08,150 --> 00:02:07,200

than four and a half million pounds and

33

00:02:10,869 --> 00:02:08,160

now

34

00:02:12,470 --> 00:02:10,879

one minute and 27 seconds into the

35

00:02:13,830 --> 00:02:12,480

flight the main engines and solid rocket

36

00:02:15,030 --> 00:02:13,840

boosters have reduced that weight by

37

00:02:17,350 --> 00:02:15,040

about half

38

00:02:19,589 --> 00:02:17,360

solid rock rocket boosters alone are

39

00:02:22,070 --> 00:02:19,599

burning 11 000 pounds of propellant per

40

00:02:27,830 --> 00:02:22,080

second and the external tank is now 3

41

00:02:32,390 --> 00:02:29,270

discovery is now

42

00:02:34,430 --> 00:02:32,400

21 miles away from its launch pad and 22

43

00:02:37,190 --> 00:02:34,440

miles in altitude traveling

44

00:02:39,350 --> 00:02:37,200

2700 miles per hour all three main

45

00:02:40,949 --> 00:02:39,360

engines are working just as expected the

46

00:02:43,270 --> 00:02:40,959

three fuel cells are generating power

47

00:02:45,430 --> 00:02:43,280

and three auxiliary power units are all

48

00:02:48,150 --> 00:02:45,440

producing pressure in short everything

49

00:02:49,750 --> 00:02:48,160

performing well

50

00:02:56,630 --> 00:02:49,760

two minutes and seven seconds into the

51  
00:02:59,350 --> 00:02:57,830  
the booster officer in the mission

52  
00:03:01,830 --> 00:02:59,360  
control center has confirmed solid

53  
00:03:11,270 --> 00:03:01,840  
rocket booster separation all systems

54  
00:03:14,790 --> 00:03:12,949  
two orbital maneuvering system engines

55  
00:03:16,869 --> 00:03:14,800  
on discovery's tail are now firing as

56  
00:03:18,949 --> 00:03:16,879  
well providing the shuttle and extra

57  
00:03:22,309 --> 00:03:18,959  
boost into orbit the engine burn will

58  
00:03:26,949 --> 00:03:22,319  
last one minute and 44 seconds

59  
00:03:32,630 --> 00:03:30,630  
discovery copies two engines

60  
00:03:34,550 --> 00:03:32,640  
that call indicates that discovery can

61  
00:03:36,869 --> 00:03:34,560  
now reach in space should one of

62  
00:03:38,229 --> 00:03:36,879  
the three main engines fail however all

63  
00:03:40,149 --> 00:03:38,239

three of those managers are currently

64

00:03:41,910 --> 00:03:40,159

working well

65

00:03:44,550 --> 00:03:41,920

two minutes and 59 seconds into the

66

00:03:47,350 --> 00:03:44,560

flight and discovery is now

67

00:03:49,190 --> 00:03:47,360

79 miles away from kennedy space center

68

00:03:51,990 --> 00:03:49,200

in florida

69

00:04:14,149 --> 00:03:52,000

48 miles in altitude and traveling at

70

00:04:18,629 --> 00:04:15,670

space shuttle discovery also seeing the

71

00:04:36,469 --> 00:04:18,639

first of many sunrises of the sts-3131

72

00:04:41,430 --> 00:04:38,710

discovery houston you are negative

73

00:04:47,110 --> 00:04:45,110

discovery copies negative return

74

00:04:48,790 --> 00:04:47,120

discovery is now flying too high and too

75

00:04:51,270 --> 00:04:48,800

fast to return to the kennedy space

76  
00:04:52,870 --> 00:04:51,280  
center in the event of an engine failure

77  
00:04:54,710 --> 00:04:52,880  
that's not currently a problem however

78  
00:04:56,550 --> 00:04:54,720  
as all engines are continuing to perform

79  
00:04:57,990 --> 00:04:56,560  
as expected

80  
00:05:00,310 --> 00:04:58,000  
four minutes and 15 seconds into

81  
00:05:03,029 --> 00:05:00,320  
discovery's flight shuttle is traveling

82  
00:05:07,909 --> 00:05:03,039  
6 000 miles per hour at an altitude of

83  
00:05:27,590 --> 00:05:07,919  
63 miles and uh is 181 miles away from

84  
00:05:30,550 --> 00:05:29,110  
environmental systems officer here in

85  
00:05:32,150 --> 00:05:30,560  
mission controls confirmed that the

86  
00:05:33,749 --> 00:05:32,160  
flash evaporator system has been

87  
00:05:35,510 --> 00:05:33,759  
activated to provide cooling to the

88  
00:06:02,710 --> 00:05:35,520

shuttle system until the shuttle's cargo

89

00:06:02,720 --> 00:06:07,830

discovery press to ato

90

00:06:07,840 --> 00:06:12,550

discovery copies press to ato

91

00:06:15,510 --> 00:06:13,909

should two of the shuttle's three main

92

00:06:17,029 --> 00:06:15,520

engines fail after this point that can

93

00:06:19,110 --> 00:06:17,039

still reach us safe though lower than

94

00:06:21,029 --> 00:06:19,120

planned orbit as that call from capcom

95

00:06:23,270 --> 00:06:21,039

rickster co-indicated

96

00:06:25,270 --> 00:06:23,280

discovery is now five

97

00:06:29,029 --> 00:06:25,280

minutes and 42 minutes seconds and two

98

00:06:36,710 --> 00:06:32,830

discovery single engine knobs

99

00:06:38,390 --> 00:06:36,720

three 67 miles in altitude and 351 miles

100

00:06:39,909 --> 00:06:38,400

away from kennedy space center discovery

101  
00:06:42,950 --> 00:06:39,919  
could still make it across the atlantic

102  
00:06:44,629 --> 00:06:42,960  
for an abort landing even if two three

103  
00:06:46,230 --> 00:06:44,639  
three main engines failed at this point

104  
00:06:50,390 --> 00:06:46,240  
all engines are performing well every

105  
00:06:50,400 --> 00:06:59,990  
discovery single engine

106  
00:07:04,790 --> 00:07:01,270  
discovery now

107  
00:07:07,510 --> 00:07:04,800  
flying more than 10 000 miles per hour

108  
00:07:11,029 --> 00:07:07,520  
66 miles in altitude and 430 miles away

109  
00:07:11,039 --> 00:07:15,110  
discovery press tomiko

110  
00:07:19,990 --> 00:07:18,550  
discovery copies press tomeiko

111  
00:07:23,350 --> 00:07:20,000  
and that call indicates the discovery

112  
00:07:25,510 --> 00:07:23,360  
can reach its planned orbit of 136 by 36

113  
00:07:27,270 --> 00:07:25,520

statute miles even if one of the engines

114

00:07:28,550 --> 00:07:27,280

fails all three engines are still

115

00:07:31,029 --> 00:07:28,560

working well

116

00:07:42,950 --> 00:07:31,039

as are the auxiliary power units and the

117

00:07:48,230 --> 00:07:45,110

discover you are single engine press

118

00:07:50,230 --> 00:07:48,240

your shutdown plan is nominal

119

00:07:58,390 --> 00:07:50,240

go for the plus x go for the pitch

120

00:08:01,909 --> 00:07:59,990

even if two engines were to fail at this

121

00:08:03,670 --> 00:08:01,919

point discovery could still make its

122

00:08:05,350 --> 00:08:03,680

planned orbit with just one that

123

00:08:06,869 --> 00:08:05,360

shouldn't be necessary however as all

124

00:08:09,510 --> 00:08:06,879

three engines are still performing at

125

00:08:11,270 --> 00:08:09,520

full capability

126

00:08:13,350 --> 00:08:11,280

also capcom rick starkel there letting

127

00:08:15,029 --> 00:08:13,360

commander alan point extra know the

128

00:08:16,550 --> 00:08:15,039

discovery will cut off its three main

129

00:08:18,710 --> 00:08:16,560

engines as planned and that he has the

130

00:08:21,029 --> 00:08:18,720

go ahead then to pitch discovery up to

131

00:08:22,869 --> 00:08:21,039

allow for photos of the external tank to

132

00:08:28,950 --> 00:08:22,879

be taken after its external after its

133

00:08:32,949 --> 00:08:31,430

discovery now 7 minutes and 48 seconds

134

00:08:35,509 --> 00:08:32,959

into its uh

135

00:08:38,469 --> 00:08:35,519

mission traveling at 15 000 miles per

136

00:09:10,870 --> 00:08:38,479

hour 63 miles in altitude and 730 miles

137

00:09:13,829 --> 00:09:12,230

the booster officer here in mission

138

00:09:15,990 --> 00:09:13,839

control is reporting that discovery's

139

00:09:20,310 --> 00:09:16,000

three main engines have been shut off

140

00:09:23,430 --> 00:09:20,320

now waiting for external tank separation

141

00:09:26,070 --> 00:09:23,440

discovery houston nominal miko ohms1 is

142

00:09:31,590 --> 00:09:26,080

not required

143

00:09:35,829 --> 00:09:34,070

there is the external tank separation

144

00:09:38,630 --> 00:09:35,839

eight minutes and 53 seconds into the

145

00:09:41,670 --> 00:09:38,640

sts-130 mission discovery now safely in

146

00:09:47,829 --> 00:09:43,829

66 miles above the earth

147

00:09:50,110 --> 00:09:47,839

and traveling at 17 500 miles per hour

148

00:09:52,470 --> 00:09:50,120

also uh