



1
00:00:05,749 --> 00:00:02,790
20 seconds

2
00:00:07,990 --> 00:00:05,759
the sound suppression water system

3
00:00:09,910 --> 00:00:08,000
has been activated protecting discovery

4
00:00:12,549 --> 00:00:09,920
and the launch pad from acoustical

5
00:00:18,150 --> 00:00:15,190
go for main engine start

6
00:00:19,109 --> 00:00:18,160
we have main engine start

7
00:00:20,390 --> 00:00:19,119
two

8
00:00:22,950 --> 00:00:20,400
one

9
00:00:25,990 --> 00:00:22,960
booster ignition and the final liftoff

10
00:00:27,990 --> 00:00:26,000
of discovery a tribute to the dedication

11
00:00:30,070 --> 00:00:28,000
hard work and pride of america's space

12
00:00:36,150 --> 00:00:30,080
shuttle team the shuttle has cleared the

13
00:00:39,750 --> 00:00:37,830

houston space shuttle now rolling over

14

00:00:40,790 --> 00:00:39,760

onto its back for the seven minute ride

15

00:00:42,709 --> 00:00:40,800

into orbit

16

00:01:05,189 --> 00:00:42,719

discovery now making one last reach for

17

00:01:08,230 --> 00:01:06,710

discovery's engines are now throttling

18

00:01:09,910 --> 00:01:08,240

down as the orbiter passes through the

19

00:01:11,590 --> 00:01:09,920

area of maximum pressure reducing the

20

00:01:23,510 --> 00:01:11,600

stress on the shuttle as it goes

21

00:01:33,350 --> 00:01:25,670

discovery houston you are go at throttle

22

00:01:35,670 --> 00:01:34,390

well commander steve lindsay

23

00:01:37,429 --> 00:01:35,680

acknowledging the call from capcom

24

00:01:42,950 --> 00:01:37,439

charlie hoba as discovery's three main

25

00:01:46,149 --> 00:01:44,389

lindsey is joined on the flight deck by

26

00:01:54,069 --> 00:01:46,159

pilot eric bowen mission specialist al

27

00:01:58,870 --> 00:01:57,670

specialist mike barrett and steve bowen

28

00:02:00,069 --> 00:01:58,880

discovery's three main engines are

29

00:02:01,910 --> 00:02:00,079

burning fuel at a rate that would drain

30

00:02:03,830 --> 00:02:01,920

an average swimming pool in about 25

31

00:02:05,109 --> 00:02:03,840

seconds

32

00:02:06,870 --> 00:02:05,119

the engines combined with the solid

33

00:02:09,910 --> 00:02:06,880

rocket boosters produce more than seven

34

00:02:12,949 --> 00:02:11,510

one minute 50 seconds into the flight

35

00:02:14,949 --> 00:02:12,959

we're standing by for separation of the

36

00:02:15,790 --> 00:02:14,959

twin solid rocket boosters discovery now

37

00:02:18,790 --> 00:02:15,800

traveling

38

00:02:20,710 --> 00:02:18,800

2695 miles an hour it's altitude 24

39

00:02:35,270 --> 00:02:20,720
miles downrange from the Kennedy Space

40

00:02:38,710 --> 00:02:37,190
booster separation confirmed Discovery's

41

00:02:40,550 --> 00:02:38,720
guidance is now converging as the

42

00:02:46,070 --> 00:02:40,560
shuttle's onboard computers fine tune

43

00:02:50,949 --> 00:02:47,830
two minutes 25 seconds into the flight

44

00:02:53,110 --> 00:02:50,959
Discovery traveling 3189 miles an hour

45

00:02:57,750 --> 00:02:53,120
its altitude 37 miles downrange from the

46

00:03:00,869 --> 00:02:59,190
Discovery now getting a boost into orbit

47

00:03:02,229 --> 00:03:00,879
from its twin orbital maneuvering system

48

00:03:03,350 --> 00:03:02,239
engines on either side of the shuttle's

49

00:03:04,710 --> 00:03:03,360
tail

50

00:03:06,949 --> 00:03:04,720
these two engines will burn for two

51
00:03:07,830 --> 00:03:06,959
minutes and 32 seconds your two-engine

52
00:03:09,990 --> 00:03:07,840
towel

53
00:03:12,229 --> 00:03:10,000
we do have updates to your no-com mode

54
00:03:14,550 --> 00:03:12,239
boundaries and we did launch late into

55
00:03:16,710 --> 00:03:14,560
pain one our only pain

56
00:03:19,350 --> 00:03:16,720
the contingency abort boundaries we'll

57
00:03:20,630 --> 00:03:19,360
use our in-plane plus 230

58
00:03:25,110 --> 00:03:20,640
let me know when you're ready to copy

59
00:03:28,949 --> 00:03:27,190
okay copy all

60
00:03:31,990 --> 00:03:28,959
and ready to copy

61
00:03:32,949 --> 00:03:32,000
enter your press to ato eleven decimal

62
00:03:45,430 --> 00:03:32,959
nine

63
00:03:53,030 --> 00:03:45,440

four

64

00:03:55,830 --> 00:03:54,470
discovery can now make it to emergency

65

00:03:57,270 --> 00:03:55,840
landing sites in europe should one of

66

00:04:01,350 --> 00:03:57,280
the engines fail but all three engines

67

00:04:02,949 --> 00:04:01,360
continue to perform as expected

68

00:04:04,710 --> 00:04:02,959
updating the crew there with some

69

00:04:06,309 --> 00:04:04,720
updated uh

70

00:04:10,789 --> 00:04:06,319
time information due to the later than

71

00:04:14,309 --> 00:04:12,229
three minutes and 50 seconds into the

72

00:04:18,390 --> 00:04:14,319
flight the shuttle traveling 4 700 miles

73

00:04:24,070 --> 00:04:21,830
discover your negative return

74

00:04:25,830 --> 00:04:24,080
negative return

75

00:04:27,189 --> 00:04:25,840
discovery now traveling too high and too

76

00:04:29,590 --> 00:04:27,199

fast to return to the kennedy space

77

00:04:31,270 --> 00:04:29,600

center in the event of an engine failure

78

00:04:32,870 --> 00:04:31,280

but all three main engines continue to

79

00:04:34,870 --> 00:04:32,880

function as expected the shuttle now

80

00:04:36,870 --> 00:04:34,880

traveling 5200 miles an hour his

81

00:05:05,749 --> 00:04:36,880

altitude 62 miles downrange from the

82

00:05:10,150 --> 00:05:07,590

four minutes 45 seconds into the flight

83

00:05:12,710 --> 00:05:10,160

discovery traveling 6 200 miles an hour

84

00:05:16,469 --> 00:05:12,720

it's altitude 66 miles

85

00:05:17,749 --> 00:05:16,479

downrange from ksc 229 miles

86

00:05:19,430 --> 00:05:17,759

here inside mission control flight

87

00:05:21,029 --> 00:05:19,440

director richard jones and his team

88

00:05:23,029 --> 00:05:21,039

continue to monitor the progress of

89

00:05:40,310 --> 00:05:23,039

discovery's flight all systems are

90

00:05:40,320 --> 00:05:48,150

discover you are pressed to ato

91

00:05:51,270 --> 00:05:49,830

that call from capcom charlie hobart

92

00:05:52,790 --> 00:05:51,280

indicating that discovery has enough

93

00:05:54,390 --> 00:05:52,800

energy to make it to a lower than

94

00:05:55,749 --> 00:05:54,400

planned orbit should one engine fail at

95

00:05:57,430 --> 00:05:55,759

this point

96

00:06:00,469 --> 00:05:57,440

however all three engines continue to

97

00:06:15,590 --> 00:06:00,479

burn as expected

98

00:06:18,870 --> 00:06:17,270

discoveries engines are now swiveling to

99

00:06:20,629 --> 00:06:18,880

roll the shuttle to a heads up position

100

00:06:25,909 --> 00:06:20,639

to get better communication with nasa's

101
00:06:36,870 --> 00:06:30,950
discover your single engine zaragosa 104

102
00:06:39,909 --> 00:06:38,550
discovery can now make it to emergency

103
00:06:41,110 --> 00:06:39,919
landing sites in europe should two

104
00:06:43,350 --> 00:06:41,120
engines fail at this point but the

105
00:06:45,430 --> 00:06:43,360
flight continues to go well

106
00:06:47,189 --> 00:06:45,440
six minutes 24 seconds into the flight

107
00:06:49,110 --> 00:06:47,199
the shuttle traveling

108
00:06:51,350 --> 00:06:49,120
eight hundred miles an hour

109
00:06:54,550 --> 00:06:51,360
this altitude 67 miles downrange from

110
00:06:57,430 --> 00:06:54,560
the kennedy space center 447 miles

111
00:06:59,830 --> 00:06:57,440
for you nominal shutdown on all three

112
00:07:03,110 --> 00:06:59,840
and pinto you'll be go for the plus x

113
00:07:04,390 --> 00:07:03,120

and go for the pitch

114

00:07:06,230 --> 00:07:04,400

press

115

00:07:07,270 --> 00:07:06,240

shut down go for the plus x go for the

116

00:07:09,749 --> 00:07:07,280

pitch

117

00:07:11,350 --> 00:07:09,759

good read back

118

00:07:12,870 --> 00:07:11,360

that call from capcom charlie hobart

119

00:07:14,710 --> 00:07:12,880

indicating that commander steve lindsey

120

00:07:24,950 --> 00:07:14,720

has a go to press to main engine cutoff

121

00:07:36,070 --> 00:07:26,550

discover you are a single-engine

122

00:07:39,589 --> 00:07:37,749

seven minutes 15 seconds into

123

00:07:42,150 --> 00:07:39,599

discovery's flight

124

00:07:45,029 --> 00:07:42,160

the shuttle traveling 12 700 miles an

125

00:07:46,469 --> 00:07:45,039

hour it's altitude 66 miles

126

00:07:55,749 --> 00:07:46,479

downrange from the kennedy space center

127

00:07:58,790 --> 00:07:57,189

discovery's engine is now throttling

128

00:08:00,070 --> 00:07:58,800

back to keep the forces on the crew and

129

00:08:02,629 --> 00:08:00,080

the shuttle to three times out of

130

00:08:19,350 --> 00:08:04,550

the shuttle traveling 14 000 miles an

131

00:08:22,070 --> 00:08:20,629

less than 30 seconds to go in

132

00:08:49,590 --> 00:08:22,080

discovery's powered flight we're coming

133

00:09:12,550 --> 00:08:51,509

main engine cutoff confirmed space

134

00:09:12,560 --> 00:09:20,550

external tank separation confirmed

135

00:09:23,750 --> 00:09:22,070

commander steve lindsey will steer the

136

00:09:25,590 --> 00:09:23,760

shuttle up to the forward portion of the

137

00:09:29,910 --> 00:09:25,600

external tank so that the umbilical well

138

00:09:36,230 --> 00:09:32,949

discovery we saw a nominal miko ohms one

139

00:09:37,829 --> 00:09:36,240

not required preliminary tig for ohms 2

140

00:09:39,829 --> 00:09:37,839

37 30.