



1
00:00:05,269 --> 00:00:03,189
sound suppression system water activated

2
00:00:07,829 --> 00:00:05,279
t-minus ten nine eight go for

3
00:00:09,990 --> 00:00:07,839
maintenance start seven six

4
00:00:10,790 --> 00:00:10,000
main engine ignition four

5
00:00:11,669 --> 00:00:10,800
three

6
00:00:12,549 --> 00:00:11,679
two

7
00:00:15,110 --> 00:00:12,559
one

8
00:00:18,070 --> 00:00:15,120
zero and liftoff of space shuttle

9
00:00:23,109 --> 00:00:18,080
atlantis as columbus sets sail on a

10
00:00:23,119 --> 00:00:26,070
houston

11
00:00:29,669 --> 00:00:27,830
roger roll atlantis

12
00:00:30,390 --> 00:00:29,679
columbus weighs anchor from its port in

13
00:00:32,389 --> 00:00:30,400

florida

14

00:00:33,990 --> 00:00:32,399

atlantis on the proper alignment heads

15

00:00:36,069 --> 00:00:34,000

down wings level for the eight and a

16

00:00:37,590 --> 00:00:36,079

half minute ride to orbit taking aim on

17

00:00:40,790 --> 00:00:37,600

the international space station for

18

00:00:43,430 --> 00:00:40,800

docking on saturday

19

00:00:45,510 --> 00:00:43,440

28 seconds into the flight

20

00:00:47,270 --> 00:00:45,520

the three liquid fuel main engines soon

21

00:00:49,029 --> 00:00:47,280

will throttle back to 72 percent of

22

00:00:50,630 --> 00:00:49,039

rated performance going in the bucket

23

00:00:54,069 --> 00:00:50,640

reducing the stress on the shuttle as it

24

00:01:01,349 --> 00:00:56,069

atlanta's three miles in altitude seven

25

00:01:05,670 --> 00:01:03,990

50 seconds into the flight

26

00:01:07,670 --> 00:01:05,680

engines beginning to throttle back up

27

00:01:15,990 --> 00:01:07,680

standing by for that call from capcom

28

00:01:21,910 --> 00:01:19,510

atlantis go at throttle up

29

00:01:23,429 --> 00:01:21,920

atlantis

30

00:01:25,030 --> 00:01:23,439

the throttle up call acknowledged by

31

00:01:27,109 --> 00:01:25,040

commander steve frick joined on the

32

00:01:29,990 --> 00:01:27,119

flight deck by pilot allen poindexter

33

00:01:31,910 --> 00:01:30,000

rex walheim and leland melvin

34

00:01:34,630 --> 00:01:31,920

seated down on the mid-deck are stan

35

00:01:36,710 --> 00:01:34,640

love and han schlegel and leopold arts

36

00:01:38,310 --> 00:01:36,720

of the european space agency arts

37

00:01:40,950 --> 00:01:38,320

hitching a ride to his new home on the

38

00:01:43,270 --> 00:01:40,960

international space station

39

00:01:46,069 --> 00:01:43,280

one minute 30 seconds into the flight

40

00:01:47,749 --> 00:01:46,079

atlantis already 15 miles in altitude 16

41

00:01:56,389 --> 00:01:47,759

miles downrange from the kennedy space

42

00:02:00,630 --> 00:01:58,469

three good main engines three good fuel

43

00:02:05,429 --> 00:02:00,640

cells three auxiliary power units all

44

00:02:24,790 --> 00:02:07,270

standing by for solid rocket booster

45

00:02:30,390 --> 00:02:27,270

booster officer confirms good solid

46

00:02:32,150 --> 00:02:30,400

rocket booster separation good staging

47

00:02:34,070 --> 00:02:32,160

guidance now converging the onboard

48

00:02:36,229 --> 00:02:34,080

computers commanding the main engines to

49

00:02:40,070 --> 00:02:36,239

swivel aiming atlantis for its precise

50

00:02:41,910 --> 00:02:40,080

keyhole in space for main engine cutoff

51
00:02:43,589 --> 00:02:41,920
and the propulsion officer reports the

52
00:02:45,350 --> 00:02:43,599
orbital maneuvering system engines have

53
00:02:47,110 --> 00:02:45,360
ignited providing atlantis with that

54
00:02:48,949 --> 00:02:47,120
extra burst of power for the next two

55
00:02:51,030 --> 00:02:48,959
minutes assisting the shuttle and its

56
00:02:53,509 --> 00:02:51,040
crew on their climb to orbit

57
00:03:00,949 --> 00:02:53,519
two minutes 40 seconds into the flight

58
00:03:05,270 --> 00:03:03,430
that call from capcom jim dutton to the

59
00:03:06,710 --> 00:03:05,280
crew indicating that if we lost one main

60
00:03:09,110 --> 00:03:06,720
engine right now we would have enough

61
00:03:11,030 --> 00:03:09,120
energy to reach our trans-oceanic abort

62
00:03:12,710 --> 00:03:11,040
sites but we have three solid main

63
00:03:14,869 --> 00:03:12,720

engines along with the auxiliary power

64

00:03:16,550 --> 00:03:14,879

units and the fuel cells

65

00:03:20,070 --> 00:03:16,560

at the three-minute mark into the flight

66

00:03:22,630 --> 00:03:20,080

atlantis 47 miles in altitude 87 miles

67

00:03:26,070 --> 00:03:22,640

downrange traveling almost 4 000 miles

68

00:03:29,670 --> 00:03:28,149

atlantis flying on the singular power of

69

00:03:31,509 --> 00:03:29,680

its three liquid fuel main engines

70

00:03:35,910 --> 00:03:31,519

draining a half a ton of fuel per second

71

00:03:39,030 --> 00:03:37,350

coming up shortly on the point of

72

00:03:40,869 --> 00:03:39,040

negative return where the shuttle will

73

00:03:42,789 --> 00:03:40,879

be too far down range too high in

74

00:03:44,789 --> 00:03:42,799

altitude to return to the launch site in

75

00:03:46,789 --> 00:03:44,799

the event of an engine failure but we're

76

00:03:52,949 --> 00:03:46,799

flying on three solid main engines right

77

00:03:57,429 --> 00:03:54,869

three minutes 40 seconds into the flight

78

00:03:58,949 --> 00:03:57,439

atlantis 127 miles downrange from the

79

00:04:10,309 --> 00:03:58,959

kennedy space center approaching the

80

00:04:10,319 --> 00:04:15,990

atlantis negative return

81

00:04:19,509 --> 00:04:17,670

and the environmental systems officer in

82

00:04:21,590 --> 00:04:19,519

mission control reports a good flash

83

00:04:23,749 --> 00:04:21,600

evaporator system providing cooling for

84

00:04:25,350 --> 00:04:23,759

atlantis's avionics until the time we

85

00:04:27,189 --> 00:04:25,360

open the payload bay doors an hour and a

86

00:04:30,550 --> 00:04:27,199

half into the flight

87

00:04:33,909 --> 00:04:30,560

four minutes 15 seconds

88

00:04:36,710 --> 00:04:33,919

62 miles in altitude 176 miles downrange

89

00:04:38,230 --> 00:04:36,720

traveling 5500 miles an hour atlantis

90

00:04:39,749 --> 00:04:38,240

flying straight as an arrow speeding

91

00:04:57,590 --> 00:04:39,759

toward a date with the international

92

00:05:01,189 --> 00:04:59,510

with all systems looking very good

93

00:05:03,749 --> 00:05:01,199

atlantis approaching the five-minute

94

00:05:06,070 --> 00:05:03,759

mark into the flight 65 miles in

95

00:05:08,230 --> 00:05:06,080

altitude 230 miles downrange from the

96

00:05:19,990 --> 00:05:08,240

kennedy space center traveling 6 500

97

00:05:25,510 --> 00:05:23,510

atlantis press to ato

98

00:05:27,270 --> 00:05:25,520

press the ato

99

00:05:29,029 --> 00:05:27,280

that call indicating should we lose an

100

00:05:30,950 --> 00:05:29,039

engine we can make our minimal orbital

101
00:05:33,590 --> 00:05:30,960
cut off targets however all three main

102
00:05:35,510 --> 00:05:33,600
engines continue to perform normally

103
00:05:37,670 --> 00:05:35,520
three good auxiliary power units three

104
00:05:39,110 --> 00:05:37,680
good fuel cells five and a half minutes

105
00:05:41,830 --> 00:05:39,120
into the flight

106
00:05:45,189 --> 00:05:41,840
atlantis 8 000 miles an hour in its

107
00:05:51,110 --> 00:05:45,199
velocity 67 miles in altitude 310 miles

108
00:06:04,950 --> 00:05:54,870
atlantis single engine ops iii

109
00:06:08,390 --> 00:06:06,870
beginning to roll to a heads up position

110
00:06:10,230 --> 00:06:08,400
now

111
00:06:12,150 --> 00:06:10,240
atlantis computers commanding the main

112
00:06:13,749 --> 00:06:12,160
engines to swivel

113
00:06:15,590 --> 00:06:13,759

rolling to the heads-up position

114

00:06:17,029 --> 00:06:15,600

provides atlantis with more favorable

115

00:06:18,870 --> 00:06:17,039

communications through the tracking and

116

00:06:21,029 --> 00:06:18,880

data relay satellite system heading

117

00:06:25,430 --> 00:06:21,039

toward orbit atlantis single-engine

118

00:06:31,909 --> 00:06:27,270

104.

119

00:06:35,350 --> 00:06:33,830

that call from capcom jim dutton to

120

00:06:36,870 --> 00:06:35,360

commander steve frick indicating that

121

00:06:39,350 --> 00:06:36,880

should we lose a main engine now we have

122

00:06:41,590 --> 00:06:39,360

enough velocity to reach nominal orbital

123

00:06:43,590 --> 00:06:41,600

cutoff targets however we're flying on

124

00:06:45,510 --> 00:06:43,600

three good main engines all the other

125

00:06:47,749 --> 00:06:45,520

systems in good shape as well shutdown

126

00:06:51,430 --> 00:06:47,759

plan is nominal you're a go for the plus

127

00:06:57,510 --> 00:06:53,830

copy atlantis nominal shutdown plan go

128

00:07:01,830 --> 00:06:59,029

less than two minutes of powered flight

129

00:07:03,430 --> 00:07:01,840

remaining atlantis now

130

00:07:10,550 --> 00:07:03,440

miles downrange from the kennedy space

131

00:07:22,550 --> 00:07:11,670

about

132

00:07:24,150 --> 00:07:22,560

engines will once again be throttled

133

00:07:25,990 --> 00:07:24,160

down to limit the stress on the shuttle

134

00:07:28,309 --> 00:07:26,000

and seven crew members to that of three

135

00:07:30,230 --> 00:07:28,319

times the effect of gravity

136

00:07:45,510 --> 00:07:30,240

atlantis currently traveling at a speed

137

00:07:49,589 --> 00:07:47,670

main engine is now being throttled back

138

00:07:51,990 --> 00:07:49,599

seven minutes 40 seconds into the flight

139

00:07:54,309 --> 00:07:52,000

atlantis now traveling 14 000 miles an

140

00:08:10,550 --> 00:07:54,319

hour 675 miles downrange from the

141

00:08:15,510 --> 00:08:13,029

as atlantis enters its preliminary orbit

142

00:08:17,430 --> 00:08:15,520

it will do so at a velocity of 17

143

00:08:43,589 --> 00:08:17,440

500 miles an hour

144

00:08:48,310 --> 00:08:45,590

booster officer confirms main engine

145

00:09:10,070 --> 00:08:48,320

cutoff now standing by for the commands

146

00:09:16,550 --> 00:09:12,310

atlantis no action on the cabin dpdt

147

00:09:16,560 --> 00:09:20,230

copy no action

148

00:09:24,230 --> 00:09:22,310

spectacular view of atlanta separating

149

00:09:26,630 --> 00:09:24,240

from its external tank atlantis now in

150

00:09:28,710 --> 00:09:26,640

its preliminary orbit the columbus

151
00:09:30,230 --> 00:09:28,720
module europe's new science center in

152
00:09:34,630 --> 00:09:30,240
space

153
00:09:34,640 --> 00:09:38,070
mama

154
00:09:41,590 --> 00:09:39,590
commander steve frick now maneuvering

155
00:09:43,350 --> 00:09:41,600
atlantis to the correct orientation so

156
00:09:45,030 --> 00:09:43,360
that video and digital stills of the

157
00:09:46,790 --> 00:09:45,040
fuel tank can be captured by cameras

158
00:09:48,790 --> 00:09:46,800
embedded in the shuttle's umbilical well

159
00:09:51,269 --> 00:09:48,800
for post-flight analysis

160
00:09:52,949 --> 00:09:51,279
a smooth and uneventful ascent atlantis

161
00:09:54,790 --> 00:09:52,959
now in its preliminary orbit the