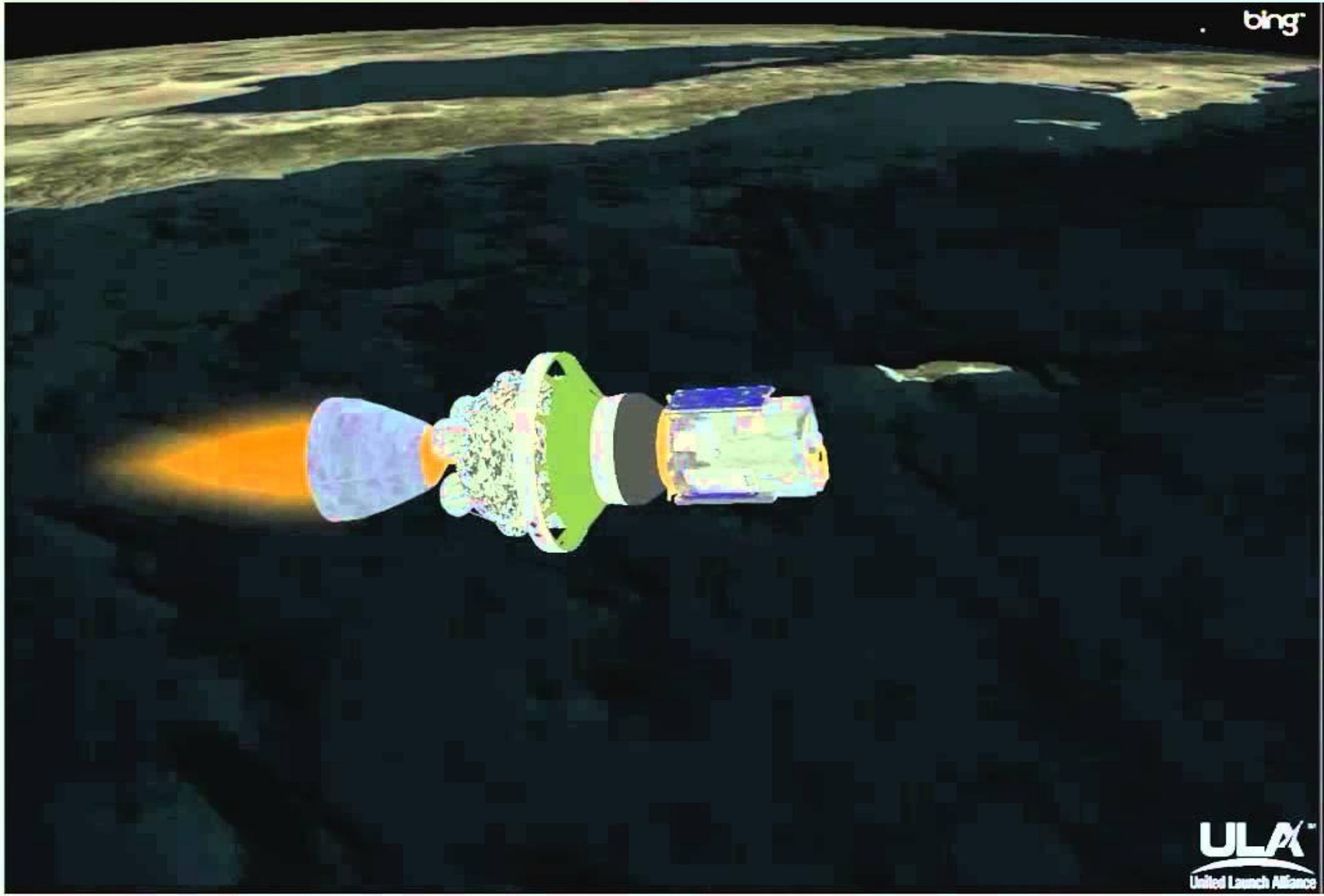

Delta Orbital Elements
Apogee Alt (nm): 90.24
Perigee Alt (nm): -2529.85
Inc (deg): 97.019
Velocity (ft/sec): 16639.39

VTS Angles
Azimuth (degEast): 194.6
Elevation (deg): 9.6

SNI Angles
Azimuth (degEast): 211.1
Elevation (deg): 13.4

HBK_LSX Angles
Azimuth (degEast): 284.0
Elevation (deg): -76.4

TTS Angles
Azimuth (degEast): 241.0
Elevation (deg): -25.3

HTS Angles
Azimuth (degEast): 68.8
Elevation (deg): -14.7

1
00:00:11,350 --> 00:00:03,590
t minus 30 status check

2
00:00:11,360 --> 00:00:16,070
t minus two is twenty seconds

3
00:00:16,080 --> 00:00:21,029
d minus 15 seconds

4
00:00:25,349 --> 00:00:23,590
green board t minus 10

5
00:00:26,310 --> 00:00:25,359
9 8

6
00:00:27,429 --> 00:00:26,320
7

7
00:00:28,470 --> 00:00:27,439
6

8
00:00:29,429 --> 00:00:28,480
5

9
00:00:30,230 --> 00:00:29,439
4

10
00:00:32,870 --> 00:00:30,240
three

11
00:00:35,910 --> 00:00:32,880
two engine start one

12
00:00:37,670 --> 00:00:35,920
zero at liftoff of the delta ii rocket

13
00:00:40,069 --> 00:00:37,680

with oco2

14
00:00:50,709 --> 00:00:40,079
tracking a greenhouse gas in seek of

15
00:00:55,029 --> 00:00:52,950
the chamber pressure in the three solids

16
00:00:56,709 --> 00:00:55,039
good symmetrical burn

17
00:01:04,149 --> 00:00:56,719
22 seconds in

18
00:01:11,350 --> 00:01:08,469
the two deck coming up on one mile

19
00:01:17,910 --> 00:01:11,360
range distance 7.3 nautical miles

20
00:01:17,920 --> 00:01:21,990
past mark 1

21
00:01:27,190 --> 00:01:25,429
50 seconds in maximum dynamic pressure

22
00:01:31,749 --> 00:01:27,200
standing by for the solids dropping in

23
00:01:34,870 --> 00:01:33,350
and we have burnout of the three solids

24
00:01:37,670 --> 00:01:34,880
we'll be holding on to those solids for

25
00:01:38,950 --> 00:01:37,680
about 40 seconds to assure a safe water

26
00:01:41,190 --> 00:01:38,960
impact point

27
00:01:43,350 --> 00:01:41,200
one minute seven seconds into the flight

28
00:01:45,590 --> 00:01:43,360
altitude now 7.2 nautical miles

29
00:01:49,030 --> 00:01:45,600
downrange distance 10 nautical miles

30
00:01:55,429 --> 00:01:49,040
velocity 991 miles per hour

31
00:01:59,429 --> 00:01:57,510
about 15 seconds now until we expect

32
00:02:01,030 --> 00:01:59,439
those three uh solid boosters to

33
00:02:02,550 --> 00:02:01,040
separate from the vehicle as we're

34
00:02:15,750 --> 00:02:02,560
approaching the one minute 30 second

35
00:02:19,670 --> 00:02:17,910
and we have separation

36
00:02:23,190 --> 00:02:19,680
three solids have separated from the

37
00:02:23,200 --> 00:02:27,910
one minute 50 seconds in

38
00:02:33,309 --> 00:02:30,309

altitude now 17 nautical miles downrange

39
00:02:36,390 --> 00:02:33,319
distance 4.5 nautical miles velocity

40
00:02:39,430 --> 00:02:36,400
1462 miles per hour

41
00:02:41,030 --> 00:02:39,440
passing the two-minute five-second mark

42
00:02:46,630 --> 00:02:41,040
the pressure is holding very well in the

43
00:02:50,790 --> 00:02:48,150
engine control is good in the main

44
00:02:57,830 --> 00:02:50,800
engine and in both verniers

45
00:03:01,430 --> 00:03:00,309
two minutes 25 seconds chamber pressure

46
00:03:03,509 --> 00:03:01,440
is holding

47
00:03:09,190 --> 00:03:03,519
in the main engine and the verniers

48
00:03:13,509 --> 00:03:11,270
mission events occurring very close to

49
00:03:15,910 --> 00:03:13,519
anticipated time

50
00:03:22,790 --> 00:03:15,920
mark 2 minutes 41 seconds a vehicle now

51
00:03:26,390 --> 00:03:24,789
two minutes 50 seconds in

52
00:03:28,309 --> 00:03:26,400
chamber pressure continues to look good

53
00:03:30,229 --> 00:03:28,319
main engine control and vernier control

54
00:03:32,390 --> 00:03:30,239
is good coming up on the three minute

55
00:03:37,750 --> 00:03:32,400
mark

56
00:03:40,949 --> 00:03:39,190
looking at our mission events mission

57
00:03:43,589 --> 00:03:40,959
events occurred very close to their

58
00:03:44,949 --> 00:03:43,599
anticipated times

59
00:03:53,429 --> 00:03:44,959
about one minute and ten seconds

60
00:03:58,630 --> 00:03:55,670
three minutes 20 seconds in

61
00:04:01,869 --> 00:03:58,640
altitude now 35 nautical miles downrange

62
00:04:08,149 --> 00:04:01,879
distance 54.7 nautical miles velocity

63
00:04:12,630 --> 00:04:10,390

passing three minutes 34 seconds vehicle

64
00:04:14,710 --> 00:04:12,640
now going mach 10 10 times the speed of

65
00:04:22,629 --> 00:04:14,720
sound less than one minute remains now

66
00:04:27,350 --> 00:04:25,030
three minutes 50 seconds in altitude

67
00:04:31,430 --> 00:04:27,360
42.7 nautical miles downrange at

68
00:04:32,950 --> 00:04:31,440
distance 94.9 nautical miles velocity 70

69
00:04:34,710 --> 00:04:32,960
384

70
00:04:36,790 --> 00:04:34,720
miles per hour passing the four-minute

71
00:04:39,030 --> 00:04:36,800
mark

72
00:04:57,270 --> 00:04:39,040
expect main engine cut off about 20

73
00:05:03,510 --> 00:04:59,749
and we have main engine cut off

74
00:05:11,350 --> 00:05:05,270
and we have vico the frontier cutoff

75
00:05:14,870 --> 00:05:13,270
and we have one two sep

76
00:05:16,550 --> 00:05:14,880
sending by for ignition and we have

77
00:05:18,070 --> 00:05:16,560
ignition on the second stage second

78
00:05:22,070 --> 00:05:18,080
stage chamber pressure is beginning to

79
00:05:28,310 --> 00:05:23,510
good chamber pressure on the second

80
00:05:28,320 --> 00:05:33,430
standing by for fairing jettison

81
00:05:38,070 --> 00:05:35,990
and we have fairing jettison

82
00:05:40,070 --> 00:05:38,080
good faring jettison now at five minutes

83
00:05:43,029 --> 00:05:40,080
five seconds into the flight

84
00:05:44,510 --> 00:05:43,039
altitude now 71.8 nautical miles

85
00:05:48,550 --> 00:05:44,520
downrange distance

86
00:05:59,749 --> 00:05:48,560
269.1 nautical miles velocity 10 671

87
00:06:03,670 --> 00:06:02,230
now passing a five minutes 28 seconds in

88
00:06:05,510 --> 00:06:03,680

still looking good

89
00:06:07,270 --> 00:06:05,520
chamber pressure good on the second

90
00:06:13,350 --> 00:06:07,280
stage very good engine control in the

91
00:06:19,749 --> 00:06:16,950
five minutes 41 seconds in

92
00:06:23,029 --> 00:06:19,759
altitude 82.7 nautical miles downrange

93
00:06:23,870 --> 00:06:23,039
distance 360 nautical miles our velocity

94
00:06:28,150 --> 00:06:23,880
11

95
00:06:31,749 --> 00:06:30,309
now passing five minutes 55 seconds into

96
00:06:33,909 --> 00:06:31,759
the flight still looking good chamber

97
00:06:35,670 --> 00:06:33,919
pressure holding very well in the second

98
00:06:39,029 --> 00:06:35,680
stage good engine control in the second

99
00:06:42,710 --> 00:06:39,039
stage in pitch and yaw

100
00:06:48,070 --> 00:06:45,670
this first burn of the second stage

101
00:06:55,830 --> 00:06:48,080
is scheduled to last about 5 minutes and

102
00:06:55,840 --> 00:07:02,150
still looking good

103
00:07:12,230 --> 00:07:03,830
about four minutes remaining in this

104
00:07:15,990 --> 00:07:13,990
taking a look at our flight events

105
00:07:20,710 --> 00:07:16,000
flight events occurred very very close

106
00:07:23,670 --> 00:07:22,950
now passing uh six minutes fifty seconds

107
00:07:26,629 --> 00:07:23,680
in

108
00:07:29,589 --> 00:07:26,639
altitude now is a 95.6 nautical miles

109
00:07:33,990 --> 00:07:29,599
downrange distance 542 nautical miles

110
00:07:40,150 --> 00:07:34,000
velocity 12 122 miles per hour passing

111
00:07:43,990 --> 00:07:41,990
about three minutes 15 seconds now

112
00:07:52,309 --> 00:07:44,000
remaining in this first burn of this

113
00:08:01,029 --> 00:07:54,550

transitioning now to data through tdrs

114
00:08:07,510 --> 00:08:02,550
we're on the tracking and data relay

115
00:08:12,150 --> 00:08:09,749
commander receiver decoders uh have been

116
00:08:17,670 --> 00:08:12,160
landed off

117
00:08:21,749 --> 00:08:19,830
seven minutes 45 seconds in chamber

118
00:08:24,230 --> 00:08:21,759
pressure continues to hold on the second

119
00:08:24,240 --> 00:08:32,790
good engine control

120
00:08:37,589 --> 00:08:34,709
eight minutes into the flight altitude

121
00:08:41,509 --> 00:08:37,599
now passing 101 nautical miles downrange

122
00:08:52,870 --> 00:08:41,519
distance 745 nautical miles velocity 13

123
00:09:17,430 --> 00:08:54,790
passing eight minutes 21 seconds about

124
00:09:25,269 --> 00:09:19,750
eight minutes 45 seconds in

125
00:09:30,230 --> 00:09:28,230
chamber pressure holding very well

126
00:09:32,310 --> 00:09:30,240
good engine control coming up on the

127
00:09:34,630 --> 00:09:32,320
nine minute mark

128
00:09:37,190 --> 00:09:34,640
mark nine minutes into the flight

129
00:09:39,750 --> 00:09:37,200
altitude now 101 and a half nautical

130
00:09:41,190 --> 00:09:39,760
miles downrange distance 942 nautical

131
00:09:53,190 --> 00:09:41,200
miles velocity

132
00:10:02,389 --> 00:09:55,110
nine minutes 21 seconds in one minute

133
00:10:02,399 --> 00:10:13,269
engine control continues to look good

134
00:10:13,279 --> 00:10:22,949
chamber pressure holding

135
00:10:29,509 --> 00:10:24,710
30 seconds now remaining in this first

136
00:10:35,949 --> 00:10:32,389
approaching 10 minutes in

137
00:10:39,150 --> 00:10:35,959
mark 10 minutes into the flight altitude

138
00:10:42,750 --> 00:10:39,160

100.4 nautical miles downrange distance

139
00:10:46,630 --> 00:10:42,760
1166 nautical miles velocity 16

140
00:10:47,990 --> 00:10:46,640
555 miles per hour

141
00:10:56,630 --> 00:10:48,000
standing by for

142
00:10:56,640 --> 00:11:06,150
and we have ceco

143
00:11:06,160 --> 00:11:12,389
hydraulic pump off

144
00:11:17,269 --> 00:11:15,030
10 minutes 40 seconds in

145
00:11:20,230 --> 00:11:17,279
the next burn of the second stage will