



1  
00:00:14,070 --> 00:00:06,230  
25 status check

2  
00:00:14,080 --> 00:00:18,710  
t minus 15 seconds

3  
00:00:22,070 --> 00:00:21,189  
t minus 10 9

4  
00:00:23,189 --> 00:00:22,080  
8

5  
00:00:24,390 --> 00:00:23,199  
7

6  
00:00:28,470 --> 00:00:24,400  
6

7  
00:00:29,750 --> 00:00:28,480  
5 go for main engine start 3 2

8  
00:00:31,029 --> 00:00:29,760  
1

9  
00:00:31,830 --> 00:00:31,039  
zero

10  
00:00:35,830 --> 00:00:31,840  
and

11  
00:00:38,229 --> 00:00:35,840  
liftoff of the atlas v with mms using

12  
00:00:54,310 --> 00:00:38,239  
magnetic reconnection to fill in pieces

13  
00:00:58,630 --> 00:00:56,389

engine response looks appropriate sov

14

00:01:09,030 --> 00:00:58,640

chamber pressures are going on

15

00:01:09,040 --> 00:01:14,310

and booster has throttled backwards

16

00:01:14,320 --> 00:01:26,390

has completed

17

00:01:26,400 --> 00:01:32,149

mr has now throttled back up

18

00:01:36,870 --> 00:01:34,630

rd180 continues to perform well sop

19

00:01:38,590 --> 00:01:36,880

chamber versions have rolled off

20

00:01:41,350 --> 00:01:38,600

current altitude is

21

00:01:43,190 --> 00:01:41,360

8.46 miles downrange four point one

22

00:01:44,950 --> 00:01:43,200

miles velocity

23

00:01:47,350 --> 00:01:44,960

one thousand eight hundred and

24

00:01:49,270 --> 00:01:47,360

eighty two miles per hour

25

00:01:51,429 --> 00:01:49,280

stationed at jupiter inlet now supplying

26  
00:01:58,469 --> 00:01:51,439  
data speed chamber pressures continue to

27  
00:02:03,830 --> 00:01:59,990  
and we have chamber pressures rolling

28  
00:02:15,430 --> 00:02:06,389  
and we have satisfied buddha and we've

29  
00:02:21,350 --> 00:02:18,150  
current altitude is 19 miles downrange

30  
00:02:28,550 --> 00:02:21,360  
distance 18.7 miles current velocity

31  
00:02:32,390 --> 00:02:30,470  
atlas will cut off at four minutes and

32  
00:02:34,390 --> 00:02:32,400  
nine seconds into the light

33  
00:02:42,949 --> 00:02:34,400  
rd18 continues to perform well pump

34  
00:02:42,959 --> 00:02:51,190  
coming up on closed loop steering

35  
00:03:06,229 --> 00:02:54,229  
and we have enabled close-loop steering

36  
00:03:06,239 --> 00:03:15,110  
i have performed a role bias maneuver

37  
00:03:18,470 --> 00:03:16,869  
all the data looks good coming back to

38  
00:03:20,149 --> 00:03:18,480

the mission director center rcs power

39

00:03:21,750 --> 00:03:20,159

valve has been fired that system is now

40

00:03:26,630 --> 00:03:21,760

pressuring us pressurizing the flight

41

00:03:36,869 --> 00:03:27,910

welfare limited steering has been

42

00:03:42,710 --> 00:03:39,830

current altitude is 44 miles

43

00:03:43,869 --> 00:03:42,720

downrange distance is 114 miles current

44

00:03:47,589 --> 00:03:43,879

velocity

45

00:03:49,509 --> 00:03:47,599

7155 miles per hour

46

00:04:02,630 --> 00:03:49,519

firmly accelerating smoothly at three

47

00:04:02,640 --> 00:04:13,110

coming up on our 5g throttle segment

48

00:04:21,430 --> 00:04:14,869

and booster has begun to throttle to

49

00:04:21,440 --> 00:04:29,030

space cooldown is underway

50

00:04:33,830 --> 00:04:31,189

and boosters begun to throttle the 4.6

51  
00:04:39,990 --> 00:04:33,840  
g's in preparation for pico

52  
00:04:40,000 --> 00:04:44,070  
and we have engine shutdown

53  
00:04:48,310 --> 00:04:46,310  
engine shut down right on time

54  
00:04:50,790 --> 00:04:48,320  
we have fired the retros and has clean

55  
00:04:52,870 --> 00:04:50,800  
stage separation we have box and fuel

56  
00:04:54,830 --> 00:04:52,880  
pre-start on the rl-10 chain two purge

57  
00:04:57,189 --> 00:04:54,840  
fern on the rcs

58  
00:05:01,909 --> 00:04:57,199  
underway standing by for centaur and

59  
00:05:05,270 --> 00:05:01,919  
head start and full thrust on the rl10

60  
00:05:14,629 --> 00:05:06,870  
and we have indication of payload fern

61  
00:05:18,629 --> 00:05:16,950  
and our steering has been enabled

62  
00:05:23,350 --> 00:05:18,639  
pressures are being reduced at this

63  
00:05:28,310 --> 00:05:26,230

and our pu has gone to fixed angles for

64

00:05:31,670 --> 00:05:28,320

the early portion of this nine minute

65

00:05:35,270 --> 00:05:33,430

rps line temperatures are warming

66

00:05:47,909 --> 00:05:35,280

towards bottle temperature signatures

67

00:05:51,909 --> 00:05:49,909

rl10 performance looks very good chamber

68

00:05:53,990 --> 00:05:51,919

pressures box pump discharge and fuel

69

00:05:54,710 --> 00:05:54,000

venturi all within expected region for

70

00:06:08,870 --> 00:05:54,720

the

71

00:06:13,029 --> 00:06:10,230

center is currently flying at an

72

00:06:16,309 --> 00:06:13,039

altitude of 113 miles downrange distance

73

00:06:30,390 --> 00:06:16,319

is 600 miles current velocity is 12

74

00:06:30,400 --> 00:06:34,629

six minutes into the flight

75

00:06:38,390 --> 00:06:36,950

rpu is now operating in a closed loop

76  
00:06:42,390 --> 00:06:38,400  
fashion however it's continuing to

77  
00:06:47,510 --> 00:06:44,390  
quick look at the booster performance

78  
00:06:48,390 --> 00:06:47,520  
shows we were plus 52 pounds

79  
00:07:08,070 --> 00:06:48,400  
mass

80  
00:07:18,309 --> 00:07:10,150  
and centaur has begun its world features

81  
00:07:23,350 --> 00:07:20,150  
and we have had the format change just a

82  
00:07:26,309 --> 00:07:23,360  
minor loss of data at that point

83  
00:07:27,749 --> 00:07:26,319  
rl10 continues to perform well

84  
00:07:29,749 --> 00:07:27,759  
first chamber

85  
00:07:32,070 --> 00:07:29,759  
box pump discharge and fuel venturi all

86  
00:07:34,550 --> 00:07:32,080  
within expected range

87  
00:07:43,510 --> 00:07:34,560  
and rpu has now come off the oxford

88  
00:07:47,749 --> 00:07:45,510

centaur has now achieved the earliest

89

00:07:49,430 --> 00:07:47,759

head on gate time

90

00:07:51,589 --> 00:07:49,440

range track shows

91

00:07:53,749 --> 00:07:51,599

it is beyond the rank for the head on

92

00:08:01,670 --> 00:07:53,759

gate continue to make good progress down

93

00:08:06,150 --> 00:08:03,909

loss of signal at jupiter inlet and we

94

00:08:09,029 --> 00:08:06,160

are now on tdrs east

95

00:08:11,990 --> 00:08:09,039

current altitude is 142 miles downrange

96

00:08:13,230 --> 00:08:12,000

distance is 1002 miles current velocity

97

00:08:22,390 --> 00:08:13,240

is 13

98

00:08:22,400 --> 00:08:36,230

has now switched to antenna select mode

99

00:08:39,909 --> 00:08:38,310

continuing to see our normal thermal

100

00:08:41,990 --> 00:08:39,919

conditioning firings on the reaction

101  
00:08:43,909 --> 00:08:42,000  
control system

102  
00:08:48,470 --> 00:08:43,919  
line temperatures have nearly warm to

103  
00:08:53,269 --> 00:08:50,230  
pressures are stable storage bottle

104  
00:08:53,279 --> 00:08:59,990  
battery voltages also look good

105  
00:09:00,000 --> 00:09:07,670  
8 minutes 30 seconds into the flight

106  
00:09:12,310 --> 00:09:10,470  
five minutes remain in this burn

107  
00:09:14,630 --> 00:09:12,320  
all centaur systems look very good at

108  
00:09:17,590 --> 00:09:14,640  
this point currently

109  
00:09:18,710 --> 00:09:17,600  
centaur is flying at an altitude of 149

110  
00:09:23,110 --> 00:09:18,720  
miles

111  
00:09:37,110 --> 00:09:23,120  
velocity 14

112  
00:09:41,350 --> 00:09:39,110  
and centaur pu is now controlling near

113  
00:09:44,230 --> 00:09:41,360

nominal

114

00:09:48,550 --> 00:09:44,240

rf10 performance is within band for the

115

00:09:48,560 --> 00:10:05,430

temperatures look good

116

00:10:29,030 --> 00:10:07,190

four minutes remaining in this centaur

117

00:10:34,310 --> 00:10:30,949

launch plus 10 minutes 10 minutes into

118

00:10:39,030 --> 00:10:37,430

our tank pressures are stable storage

119

00:10:49,350 --> 00:10:39,040

bottle pressures continue to look good

120

00:10:53,670 --> 00:10:51,670

you has nearly worked off all the excess

121

00:10:56,790 --> 00:10:53,680

oxidizer

122

00:10:58,870 --> 00:10:56,800

rf10 is performing well brush chambers

123

00:11:01,030 --> 00:10:58,880

box pump discharge and fuel venturi look

124

00:11:27,190 --> 00:11:01,040

good three minutes from ending the

125

00:11:31,750 --> 00:11:29,350

santoro continues to perform normally

126

00:11:34,350 --> 00:11:31,760

currently flying at an altitude of 145

127

00:11:36,230 --> 00:11:34,360

miles downrange distance is

128

00:11:38,269 --> 00:11:36,240

1848 miles

129

00:11:57,670 --> 00:11:38,279

current velocity 15

130

00:12:04,629 --> 00:11:59,350

two minutes remaining in this centaur

131

00:12:08,829 --> 00:12:07,110

two minutes remain in the sperm rl10

132

00:12:13,190 --> 00:12:08,839

performance continues to look

133

00:12:14,949 --> 00:12:13,200

excellent getting very good data quality

134

00:12:16,629 --> 00:12:14,959

rsc line temperatures have warmed the

135

00:12:18,310 --> 00:12:16,639

bottle temperatures

136

00:12:29,670 --> 00:12:18,320

continuing to see our thermal

137

00:12:29,680 --> 00:12:58,150

12 minutes into the flight

138

00:12:58,160 --> 00:13:01,910

tower continues to perform well

139

00:13:06,470 --> 00:13:03,910

current tank pressures are stable

140

00:13:09,030 --> 00:13:06,480

storage bottle pressures look good body

141

00:13:10,150 --> 00:13:09,040

rates are the same and continue to

142

00:13:14,310 --> 00:13:10,160

control right down the middle of the

143

00:13:29,829 --> 00:13:17,190

about 45 seconds remaining in the first

144

00:13:29,839 --> 00:13:40,790

13 minutes into the mission

145

00:13:46,230 --> 00:13:43,110

and we have iip vanish centaur is now

146

00:13:51,829 --> 00:13:49,750

rl10 performance continues to be nominal

147

00:14:02,629 --> 00:13:51,839

rsc continues its thermal conditioning

148

00:14:11,110 --> 00:14:04,389

and we have miko engine shutdown looks

149

00:14:16,550 --> 00:14:13,030

tank pressures are stable fuel tank has

150

00:14:18,150 --> 00:14:16,560

been vented down

151

00:14:28,069 --> 00:14:18,160

large bottle pressures are stable as

152

00:14:31,269 --> 00:14:30,150

entire has begun its turn to ptc

153

00:14:35,350 --> 00:14:31,279

attitude

154

00:14:38,150 --> 00:14:35,360

begun its role at one degree per second

155

00:14:41,030 --> 00:14:38,160

this coast period is expected to be 58

156

00:14:42,870 --> 00:14:41,040

minutes and 58 seconds in duration

157

00:14:45,189 --> 00:14:42,880

prior to our