

ariaspace
service & solutions

00:06



1
00:00:03,830 --> 00:00:01,910
we're off in a minute we're gonna cut

2
00:00:05,749 --> 00:00:03,840
away let you hear the ddo

3
00:00:25,830 --> 00:00:05,759
call out the final countdown enjoy the

4
00:00:25,840 --> 00:00:34,630
foreign

5
00:00:34,640 --> 00:00:54,549
decorative

6
00:00:54,559 --> 00:00:59,750
me

7
00:01:06,149 --> 00:01:02,990
and so we are underway did you see at

8
00:01:08,550 --> 00:01:06,159
1852 local time and right on time ariane

9
00:01:09,910 --> 00:01:08,560
5 began her mission lifting up

10
00:01:12,070 --> 00:01:09,920
beautifully

11
00:01:13,670 --> 00:01:12,080
showing a lot of power right from the

12
00:01:15,350 --> 00:01:13,680
ground here in french guyana with a lot

13
00:01:17,510 --> 00:01:15,360

of fire beginning her second mission of

14

00:01:19,030 --> 00:01:17,520

the year the 2010 atv going to the

15

00:01:21,109 --> 00:01:19,040

international space station

16

00:01:22,710 --> 00:01:21,119

beautiful shots always impressive for

17

00:01:24,630 --> 00:01:22,720

the people at the observation sites

18

00:01:27,270 --> 00:01:24,640

around the base in their cars or on the

19

00:01:29,910 --> 00:01:27,280

beaches area and lifting off in her

20

00:01:32,469 --> 00:01:29,920

trail of gold she's making a turn now

21

00:01:34,550 --> 00:01:32,479

she's going to pass overhead we're about

22

00:01:36,630 --> 00:01:34,560

15 kilometers from a launch pad and even

23

00:01:38,149 --> 00:01:36,640

here you can still feel the sensation of

24

00:01:39,830 --> 00:01:38,159

launch but if you're watching from that

25

00:01:41,350 --> 00:01:39,840

closed viewing station which is only

26

00:01:42,710 --> 00:01:41,360

five kilometers away you can really

27

00:01:44,550 --> 00:01:42,720

experience that sensation of the

28

00:01:46,550 --> 00:01:44,560

acoustic noise from those two solid

29

00:01:48,469 --> 00:01:46,560

rocket boosters as they provide right

30

00:01:49,910 --> 00:01:48,479

now ninety percent of a thrust

31

00:01:52,149 --> 00:01:49,920

propelling the launch along its

32

00:01:53,590 --> 00:01:52,159

trajectory at ever higher velocity it

33

00:01:55,510 --> 00:01:53,600

really is quite sensational to witness

34

00:01:56,709 --> 00:01:55,520

there in toucan how many uh launchers

35

00:01:59,270 --> 00:01:56,719

have you witnessed i've been fortunate

36

00:02:01,109 --> 00:01:59,280

to witness two from there

37

00:02:03,270 --> 00:02:01,119

plus tonight from here

38

00:02:05,990 --> 00:02:03,280

777

39

00:02:07,429 --> 00:02:06,000

tons is there just wait that lift off

40

00:02:09,430 --> 00:02:07,439

the ddo is saying that everything is

41

00:02:12,070 --> 00:02:09,440

okay on board she's burning if you can

42

00:02:14,550 --> 00:02:12,080

believe it five tons of fuel every

43

00:02:17,510 --> 00:02:14,560

second five tons of fuel every second

44

00:02:19,110 --> 00:02:17,520

2.5 tons in each booster plus the core

45

00:02:22,309 --> 00:02:19,120

stage the lower stage burning another

46

00:02:23,990 --> 00:02:22,319

300 kilos per second the launcher now

47

00:02:26,470 --> 00:02:24,000

following the program in the onboard

48

00:02:28,470 --> 00:02:26,480

computer which gives all the orders

49

00:02:31,270 --> 00:02:28,480

including stage separations which we'll

50

00:02:33,190 --> 00:02:31,280

soon begin to see we are in the first of

51
00:02:35,589 --> 00:02:33,200
four flight phases we'll describe each

52
00:02:37,509 --> 00:02:35,599
in turn so you can follow ariane right

53
00:02:39,509 --> 00:02:37,519
now the first flight phase the single

54
00:02:40,949 --> 00:02:39,519
vulcan core stage burning with the

55
00:02:42,550 --> 00:02:40,959
boosters the boosters are going to burn

56
00:02:44,390 --> 00:02:42,560
for another four or five seconds and

57
00:02:45,910 --> 00:02:44,400
then they will be extinguished and

58
00:02:48,710 --> 00:02:45,920
you'll see them

59
00:02:50,150 --> 00:02:48,720
probably ah looks like the extinction of

60
00:02:54,550 --> 00:02:50,160
the boosters you can see them falling

61
00:02:58,390 --> 00:02:56,070
the orange lights are the boosters

62
00:03:00,470 --> 00:02:58,400
flaving out and the single point of

63
00:03:02,949 --> 00:03:00,480

light in the middle of your screen is

64

00:03:05,030 --> 00:03:02,959

ariane continuing to burn yes vedio has

65

00:03:06,949 --> 00:03:05,040

announced for separation of the two

66

00:03:10,630 --> 00:03:06,959

solid rocket boosters and coming at a

67

00:03:12,149 --> 00:03:10,640

time at 65 kilometers in altitude

68

00:03:14,070 --> 00:03:12,159

take a look simon at the left side of

69

00:03:15,830 --> 00:03:14,080

your screen on the upper left you have

70

00:03:17,830 --> 00:03:15,840

the cursor crawling up a line below that

71

00:03:19,910 --> 00:03:17,840

some letters and some numbers a and v

72

00:03:23,509 --> 00:03:19,920

can you explain yes uh so looking at

73

00:03:25,350 --> 00:03:23,519

this screen this is arian's trajectory

74

00:03:27,350 --> 00:03:25,360

it's showing us how the flight is

75

00:03:29,350 --> 00:03:27,360

progressing the curve it's a computer

76

00:03:30,869 --> 00:03:29,360

simulation of the actual trajectory and

77

00:03:32,550 --> 00:03:30,879

that white dynamic curve this is the

78

00:03:34,550 --> 00:03:32,560

actual position of a launch vehicle

79

00:03:36,309 --> 00:03:34,560

right now

80

00:03:38,470 --> 00:03:36,319

there are actually two trajectories one

81

00:03:40,149 --> 00:03:38,480

is the optimal trajectory and the real

82

00:03:41,430 --> 00:03:40,159

time trajectory as long as we're one on

83

00:03:43,190 --> 00:03:41,440

top of the other we're right where we

84

00:03:45,430 --> 00:03:43,200

should be right exactly superimposed

85

00:03:47,830 --> 00:03:45,440

perfect so the v mains velocity and

86

00:03:49,750 --> 00:03:47,840

right now we are traveling at 2.4

87

00:03:52,470 --> 00:03:49,760

kilometers per second and the a this is

88

00:03:53,589 --> 00:03:52,480

the altitude so now we're 106 kilometers

89

00:03:55,110 --> 00:03:53,599

already

90

00:03:57,110 --> 00:03:55,120

we're out of the earth's atmosphere or

91

00:03:59,190 --> 00:03:57,120

will be shortly which means the fairing

92

00:04:00,789 --> 00:03:59,200

can be jettisoned there it is coming

93

00:04:03,190 --> 00:04:00,799

right on time at about a hundred

94

00:04:04,710 --> 00:04:03,200

ten kilos we're using a new fairing

95

00:04:06,390 --> 00:04:04,720

separation system tonight aren't we

96

00:04:08,550 --> 00:04:06,400

that's right uh and in the past few

97

00:04:10,630 --> 00:04:08,560

years workspace in switzerland the aryan

98

00:04:12,229 --> 00:04:10,640

fire fairing manufacturer

99

00:04:14,470 --> 00:04:12,239

they have been developing a new system

100

00:04:15,990 --> 00:04:14,480

to support referring separation event in

101
00:04:17,990 --> 00:04:16,000
this new system with the aid of

102
00:04:19,349 --> 00:04:18,000
pyrotechnics referring first separates

103
00:04:21,430 --> 00:04:19,359
from the ariane

104
00:04:23,670 --> 00:04:21,440
around its uh circular base happens very

105
00:04:25,350 --> 00:04:23,680
very quickly very quickly indeed 56

106
00:04:27,430 --> 00:04:25,360
milliseconds to be precise and during

107
00:04:29,510 --> 00:04:27,440
this time of separation it's aided by a

108
00:04:31,670 --> 00:04:29,520
series of uh very precisely tuned

109
00:04:32,950 --> 00:04:31,680
springs around the body of ariane so at

110
00:04:34,950 --> 00:04:32,960
this point we can say the fairing has

111
00:04:36,950 --> 00:04:34,960
been separated only by a few millimeters

112
00:04:38,950 --> 00:04:36,960
no vena command is sent to separate

113
00:04:42,150 --> 00:04:38,960

referring two halves the whole event is

114

00:04:44,469 --> 00:04:42,160

over in less than 100 milliseconds now

115

00:04:46,870 --> 00:04:44,479

they wanted also a new design a shock

116

00:04:49,189 --> 00:04:46,880

reduction system a low shock

117

00:04:50,550 --> 00:04:49,199

yes exactly the whole concept this

118

00:04:52,790 --> 00:04:50,560

endeavors to minimize the shock

119

00:04:54,550 --> 00:04:52,800

environment transmitted to the arjans

120

00:04:56,550 --> 00:04:54,560

passengers today it's the first mission

121

00:04:59,030 --> 00:04:56,560

of this system so a special hello to the

122

00:05:01,510 --> 00:04:59,040

whole work team in switzerland

123

00:05:02,950 --> 00:05:01,520

the new shock reduction system was five

124

00:05:04,790 --> 00:05:02,960

years in the making

125

00:05:07,110 --> 00:05:04,800

the fairing separated first horizontally

126
00:05:08,870 --> 00:05:07,120
then pushed up and away laterally we're

127
00:05:10,550 --> 00:05:08,880
in the second powered flight phase the

128
00:05:12,629 --> 00:05:10,560
single core engine burning simon what's

129
00:05:15,430 --> 00:05:12,639
the role of the single core stage well

130
00:05:17,749 --> 00:05:15,440
the epc this is the main cryogenic stage

131
00:05:19,670 --> 00:05:17,759
and it uh for some details it's 5.4

132
00:05:21,749 --> 00:05:19,680
meters in diameter and it's 31 meters

133
00:05:23,830 --> 00:05:21,759
long it's powered by one vulcan ii

134
00:05:25,749 --> 00:05:23,840
engine that burns liquid hydrogen and

135
00:05:27,749 --> 00:05:25,759
liquid oxygen the vulcan ii engine

136
00:05:29,749 --> 00:05:27,759
provides up to one million four hundred

137
00:05:31,909 --> 00:05:29,759
thousand newtons of thrust in the vacuum

138
00:05:34,310 --> 00:05:31,919

of space and it's nozzle it's it's

139

00:05:35,990 --> 00:05:34,320

gimbal to provide a pitch in your uh

140

00:05:37,590 --> 00:05:36,000

pitching your control for the uh for the

141

00:05:39,029 --> 00:05:37,600

area and vehicle

142

00:05:41,189 --> 00:05:39,039

we're doing fine on board area and

143

00:05:43,590 --> 00:05:41,199

performing flawlessly more the mission