1
00:00:00,506 --> 00:00:17,186
[Music]

2
00:00:17,686 --> 00:00:21,306
>> Three, two, one, ignition.

3
00:00:22,056 --> 00:00:27,516
This is the LC Minotaur
launch vehicle.

4
00:00:27,716 --> 00:00:30,836
It is carrying the AA-2
Launch Abort System

5
00:00:30,836 --> 00:00:32,926
for a full stress test.

6
00:00:33,031 --> 00:00:35,031
[Inaudible]

7
00:00:35,046 --> 00:00:37,776
>> Pyros one and two
discharged both sides.

8
00:00:37,776 --> 00:00:38,636
>> [inaudible] pressure.

9
00:00:38,636 --> 00:00:39,736
>> Good control.

10
00:00:40,516 --> 00:00:43,516
[Music]

11
00:00:44,516 --> 00:00:51,136
[Inaudible]

12
00:00:51,636 --> 00:00:52,686
>> Pyros three and four.

13
00:00:52,836 --> 00:00:54,596
>> We are testing
these instruments

14
00:00:54,596 --> 00:00:59,116
to collect atmospheric wind,
aerosol and water vapor data.

15
00:00:59,496 --> 00:01:02,696
Doing this to understand how
accurate these instruments are

16
00:01:03,066 --> 00:01:05,216
and also to understand
how we might be able

17
00:01:05,216 --> 00:01:06,966
to take these instruments
to space someday.

18
00:01:07,516 --> 00:01:10,656
[Inaudible]

19
00:01:11,156 --> 00:01:11,646
>> Hi, everyone.

20
00:01:11,646 --> 00:01:13,056
Here we are on DC-8.

21
00:01:13,136 --> 00:01:15,196
We're flying about
two-thirds of the way

22
00:01:15,246 --> 00:01:17,886
through our third flight,
so flight number three.

23
00:01:18,736 --> 00:01:21,256

As you can see, students are on
board as well as about a dozen

24
00:01:21,256 --> 00:01:21,976
or so different instruments.

25
00:01:22,516 --> 00:01:26,096
[Inaudible]

26
00:01:26,596 --> 00:01:29,746
>> FIREX-AQ for short,
the goal is to track smoke

27
00:01:29,866 --> 00:01:33,146
as it crosses North America,
taking air samples ranging

28
00:01:33,196 --> 00:01:35,376
from high in the sky
to down on the ground

29
00:01:35,376 --> 00:01:36,536
where people are breathing it.

30
00:01:36,536 --> 00:01:39,116
>> The DC-8 here at NASA
Armstrong support Operation

31
00:01:39,116 --> 00:01:40,666
IceBridge since 2009.

32
00:01:40,666 --> 00:01:42,816
This will be our
seventh campaign.

33
00:01:42,816 --> 00:01:45,566
>> Air-LUSI, it is designed

34
00:01:45,566 --> 00:01:49,796

to measure the light reflected
off the moon, and it flies

35
00:01:49,846 --> 00:01:52,486
in ER-2 high-altitude airplanes.

36
00:01:53,436 --> 00:01:56,036
>> Flying high in the
Earth's atmosphere with SOFIA,

37
00:01:56,486 --> 00:01:58,596
the world's largest
airborne observatory,

38
00:01:59,076 --> 00:02:01,466
scientists finally detected
this elusive molecule called

39
00:02:01,466 --> 00:02:01,976
"helium hydride."

40
00:02:02,516 --> 00:02:08,376
[Music]

41
00:02:08,876 --> 00:02:10,306
>> [inaudible], return
to count and launch.

42
00:02:10,736 --> 00:02:10,916
>> Capsule.

43
00:02:11,016 --> 00:02:13,016
[Inaudible]

44
00:02:13,516 --> 00:02:16,856
[Blasting]

45
00:02:17,356 --> 00:02:21,576
>> SPLICE is developing a family

of sensors that are acquired

46
00:02:21,736 --> 00:02:24,736
to land safely and
precisely on the moon, Mars,

47
00:02:25,076 --> 00:02:26,076
and any other destination.

48
00:02:27,066 --> 00:02:28,426
>> Ready? Here we go.

49
00:02:29,106 --> 00:02:29,666
>> Here we go.

50
00:02:30,126 --> 00:02:32,256
>> We are in between
[inaudible].

51
00:02:32,586 --> 00:02:32,826
>> [inaudible] controller.

52
00:02:37,306 --> 00:02:39,456
[inaudible], three,
two, one, release.

53
00:02:43,076 --> 00:02:43,936
>> They'll be coming
to the right

54
00:02:43,936 --> 00:02:45,146
and then back around
to the left.

55
00:02:45,556 --> 00:02:50,146
>> The X-56A project is intended
to enable the utilization

56
00:02:50,256 --> 00:02:52,946

of light-efficient
wings by development

57
00:02:52,946 --> 00:02:56,796
of flight control technologies
to suppress flutter.

58
00:02:57,256 --> 00:02:58,176
>> And we're coming to the left.

59
00:02:59,106 --> 00:03:01,726
>> This is one of the most
heavily instrumented wings we've

60
00:03:01,726 --> 00:03:02,336
ever tested.

61
00:03:02,336 --> 00:03:04,286
There was about 10,000
sensors on our wing

62
00:03:04,286 --> 00:03:06,776
which included fiberoptic
strand sensing,

63
00:03:06,846 --> 00:03:09,936
additional strand sensing,
displacement sensors,

64
00:03:09,936 --> 00:03:11,976
load sensing, and
also inclinometers.

65
00:03:12,516 --> 00:03:17,276
[Music]

66
00:03:17,776 --> 00:03:19,676
>> Okay, [inaudible]
slowing to one, three, four.

67
00:03:19,846 --> 00:03:22,806
>> The project I'm working

68
00:03:22,806 --> 00:03:25,806
on is the Unmanned
Aircraft Systems Integration

69
00:03:25,916 --> 00:03:27,446
into the National
Airspace System.

70
00:03:28,376 --> 00:03:31,726
The plan of this project
is to integrate these UAS

71
00:03:31,796 --> 00:03:34,546
into airspace occupied by
human-piloted aircraft.

72
00:03:34,606 --> 00:03:35,586
>> Stand by, please.

73
00:03:35,586 --> 00:03:36,916
Tell your partner
where you're going.

74
00:03:38,516 --> 00:03:42,676
[Inaudible]

75
00:03:43,176 --> 00:03:45,626
>> The use of this project is
going to go for a long time

76
00:03:45,626 --> 00:03:47,986
because it's going to
establish a fundamental data set

77
00:03:47,986 --> 00:03:50,756
on how pilots breathe in

a tactical environment.

78
00:03:51,646 --> 00:03:54,896
>> This particular antenna we're
trying to use on the ground,

79
00:03:55,256 --> 00:03:57,166
and we have a flight
test campaign

80
00:03:57,316 --> 00:04:00,026
to explore exactly
how well we're able

81
00:04:00,026 --> 00:04:02,886
to control the interference of
this [inaudible] type antenna.

82
00:04:03,146 --> 00:04:03,906
>> We're really excited.

83
00:04:03,906 --> 00:04:05,526
We have this wing that
we've been designing

84
00:04:05,526 --> 00:04:08,396
for years that's been
finally built and delivered,

85
00:04:08,396 --> 00:04:11,836
and now we're testing it to see
if it matches the performance

86
00:04:11,886 --> 00:04:13,856
that we need for
the X-57 vehicle.

87
00:04:13,856 --> 00:04:17,116
>> X-57, it's a manned
electric airplane,

88
00:04:17,186 --> 00:04:20,356
and what we're doing is
developing technologies related

89
00:04:20,356 --> 00:04:20,976
to electric aircraft.

90
00:04:21,516 --> 00:04:26,056
[Music]

91
00:04:26,556 --> 00:04:29,086
>> Right now conventional
supersonic aircraft are just way

92
00:04:29,086 --> 00:04:31,096
too loud when they're
supersonic, very disturbing

93
00:04:31,096 --> 00:04:33,366
for people, but we're sure
that we can make planes

94
00:04:33,366 --> 00:04:35,546
that are quiet and
still be supersonic

95
00:04:35,606 --> 00:04:39,786
so we can reduce flight times in
half without disturbing people.

96
00:04:40,376 --> 00:04:44,466
>> Ultimately the X-59 will be
creating a quiet sonic thump.

97
00:04:46,306 --> 00:04:47,656
>> So what we're doing
now is we're going

98

00:04:47,736 --> 00:04:50,436
to take what we learned
from these experiments

99
00:04:50,876 --> 00:04:54,236
and we're going to apply them
to the X-59 which is going

100
00:04:54,236 --> 00:04:57,446
to ultimately be flown
in the year 2021 so that

101
00:04:57,446 --> 00:05:00,946
for the first time we can
get regulations on the books