1
00:00:02,840 --> 00:00:05,160
Sonic booms created by aircraft flying

2
00:00:05,160 --> 00:00:07,380
faster than the speed of sound certainly

3
00:00:07,389 --> 00:00:09,680
aren't known for being faint but rather

4
00:00:09,680 --> 00:00:11,740
for their loud make you jump effect.

5
00:00:12,040 --> 00:00:12,800
[double sonic boom]

6
00:00:13,740 --> 00:00:16,800
But sonic booms also have a quieter side

7
00:00:18,000 --> 00:00:20,360
NASA Super Sonics project is embarking on a

8
00:00:20,360 --> 00:00:22,300
new effort to characterize that

9
00:00:22,300 --> 00:00:24,720
fainter side of sonic booms in the Far

10
00:00:24,730 --> 00:00:27,020
Field Investigation of No Boom Threshold

11
00:00:27,020 --> 00:00:28,340
project or FaiNT.

12
00:00:29,100 --> 00:00:31,000
Principal investigator, Larry Cliat at

13
00:00:31,000 --> 00:00:32,880

14
00:00:32,880 --> 00:00:34,420
says FaINT is designed to

15
00:00:34,420 --> 00:00:36,580
enable engineers to better understand

16
00:00:36,580 --> 00:00:38,710
evanescent waves an acoustic phenomenon

17
00:00:38,710 --> 00:00:41,320
that occurs at the very edges of the normal

18
00:00:41,320 --> 00:00:42,600
sonic boom envelope.

19
00:00:43,000 --> 00:00:44,520
Then you have your evanescent waves which is on

20
00:00:44,580 --> 00:00:45,460
the other side of that.

21
00:00:45,740 --> 00:00:48,420
They tend to be a lot quieter

22
00:00:48,420 --> 00:00:51,100
probably about five to ten times quieter

23
00:00:51,100 --> 00:00:53,469
than your your normal in wave sonic boom

24
00:00:53,469 --> 00:00:56,000
and they kind of sound like a distant thunder rumble.

25
00:00:56,080 --> 00:00:59,140
Supersonic shockwaves produced by an aircraft flying

26
00:00:59,180 --> 00:01:01,780
at a speed of about Mach 1.2 or less and at

27
00:01:01,780 --> 00:01:04,420
and at an altitude above 35,000 feet

28
00:01:04,620 --> 00:01:07,600
typically do not reach the ground so no sonic boom

29
00:01:07,600 --> 00:01:08,680
is heard.

30
00:01:08,980 --> 00:01:11,120
This is because the supersonic shockwaves

31
00:01:11,120 --> 00:01:12,540
created at higher altitudes

32
00:01:12,549 --> 00:01:15,200
are refracted or bent upwards as they

33
00:01:15,200 --> 00:01:17,500
enter the warmer air closer to the ground.

34
00:01:18,140 --> 00:01:19,800
When these shockwaves curve upward

35
00:01:19,800 --> 00:01:22,300
they create a series of sonic boom waves

36
00:01:22,380 --> 00:01:25,100
that are focused along what is called a caustic line.

37
00:01:26,000 --> 00:01:27,920
Another phenomenon that produces evanescent waves

38
00:01:27,920 --> 00:01:29,220

is called lateral cut off.

39
00:01:29,580 --> 00:01:32,140
And there you have the aircraft flying and

40
00:01:32,140 --> 00:01:33,480
the sonic boom carpet that's produced on

41
00:01:33,480 --> 00:01:35,900
the ground laterally to that you also have

42
00:01:36,300 --> 00:01:39,180
another disturbance and those are evanescent waves

43
00:01:39,600 --> 00:01:42,820
Linear and spiral microphone arrays laid out on the dry

44
00:01:42,820 --> 00:01:45,000
lakebed at Edwards Air Force Base

45
00:01:45,000 --> 00:01:47,170
along with microphones on a blimp shaped

46
00:01:47,170 --> 00:01:49,360
balloon and a motor glider flying above

47
00:01:49,360 --> 00:01:52,040
the arrays record the faint sonic booms.

48
00:01:52,700 --> 00:01:54,360
Project manager Bret Powers says

49
00:01:54,360 --> 00:01:56,500
the overarching goal of NASA's sonic boom

50
00:01:56,500 --> 00:01:58,680
reduction research is to collect data

51
00:01:58,680 --> 00:02:00,009
that could help make commercial

52
00:02:00,009 --> 00:02:02,260
supersonic flight over land practical.

53
00:02:02,920 --> 00:02:04,900
The purpose of the FaINT project in general

54
00:02:04,960 --> 00:02:06,880
is just an additional piece of research

55
00:02:06,880 --> 00:02:08,700
that were working on for having

56
00:02:08,710 --> 00:02:10,320
a supersonic commercial transport

57
00:02:10,320 --> 00:02:11,620
that can fly over land.

58
00:02:12,240 --> 00:02:14,540
The way NASA's always trying to

59
00:02:14,580 --> 00:02:16,420
push research post boundaries and one of