1
00:00:00,010 --> 00:00:06,020
Engine Sound

2
00:00:06,040 --> 00:00:08,040
Engine

3
00:00:12,170 --> 00:00:08,070
Leia: You don't have to do this to impress me. C-3PO: Sir the

4
00:00:12,190 --> 00:00:16,190
asteroid field is approximately 3, 720 to 1. Han: Never tell me the odds.

5
00:00:16,210 --> 00:00:20,230
Narrator: Asteroids collide all the time.

6
00:00:20,250 --> 00:00:24,250
At least, we think they do. Close-up views from spacecraft show asteroids

7
00:00:24,270 --> 00:00:28,310
to be pockmarked with impact craters. But until recently, astronomers

8
00:00:28,330 --> 00:00:32,450
never expected they'd see the recent aftermath of a collision.

9
00:00:32,470 --> 00:00:36,510
Now, thanks to Hubble and Swift, they have. In

10
00:00:36,530 --> 00:00:40,540
early 2010, Hubble took a close look at the tail of what astronomers thought was an unusual

11
00:00:40,560 --> 00:00:44,700
comet. The curious tail turned out to be wreckage from a collision between two

12
00:00:44,720 --> 00:00:48,730
small asteroids. On December 11, 2010,

13
00:00:48,750 --> 00:00:52,770

astronomers saw that another asteroid, (596) Scheila, had also grown a tail.

14
00:00:52,790 --> 00:00:56,830
Swifts ability to see ultraviolet light helped astronomers rule

15
00:00:56,850 --> 00:01:00,870
out the possibility that they were looking at a comet. None of the gasses characteristic

16
00:01:00,890 --> 00:01:04,930
of a comet were detected. These plumes are clouds of dust,

17
00:01:04,950 --> 00:01:08,980
debris from the impact of a smaller asteroid, less than 100 feet across.

18
00:01:09,000 --> 00:01:13,000
The shape, evolution, and content of the plumes let astronomers reconstruct

19
00:01:13,020 --> 00:01:17,080
what happened.

20
00:01:17,100 --> 00:01:21,110
The smaller asteroid would have been heading towards Scheila at about 11,000 miles per

21
00:01:21,130 --> 00:01:22,170
hour.

22
00:01:22,190 --> 00:01:24,210
Music

23
00:01:24,230 --> 00:01:28,290
It hit at a low angle with the force of at least a 100 kiloton nuclear

24
00:01:28,310 --> 00:01:32,470
bomb. Yet much of the debris fell back onto the asteroid.

25
00:01:32,490 --> 00:01:36,500
The particles that escaped were the smallest ones. Easily

26
00:01:36,520 --> 00:01:40,570
pushed around by sunlight, this fine dust formed wispy plumes.

27
00:01:40,590 --> 00:01:44,590
When Hubble observed Scheila two weeks later, the

28
00:01:44,610 --> 00:01:48,620
plumes were barely visible. Within two months of the outburst,

29
00:01:48,640 --> 00:01:52,690
the plumes were completely gone--and with them went any sign from Earth that Scheila even had

30
00:01:52,710 --> 00:01:56,710
a collision. Astronomers estimate that, somewhere in the asteroid

31
00:01:56,730 --> 00:02:00,750
belt, events like this may happen as often as every year. Thanks to Hubble and