1
00:00:00,506 --> 00:00:05,666
[Music]

2
00:00:06,166 --> 00:00:11,066
>> Spacecraft of the future will have safer
and more reliable navigation, rendezvous

3
00:00:11,066 --> 00:00:16,126
and docking capabilities thanks to innovative
new technology developed in collaboration

4
00:00:16,186 --> 00:00:19,376
by NASA, Lockheed-Martin, and Ball Aerospace.

5
00:00:20,496 --> 00:00:23,196
A new system will be proven by the Sensor Test

6
00:00:23,266 --> 00:00:28,226
for Orion Relative Navigation Risk
Mitigation, also known as STORRM.

7
00:00:29,846 --> 00:00:34,376
This test will be carried out on
orbit during the STS 134 mission,

8
00:00:34,786 --> 00:00:37,126
the final flight of Space Shuttle Endeavor.

9
00:00:39,116 --> 00:00:42,526
The STORRM flight test will
demonstrate the first US developed,

10
00:00:42,636 --> 00:00:46,706
highly reliable navigation sensor
called the Vision Navigation Sensor,

11
00:00:46,796 --> 00:00:51,906
or VNS designed expressly for
America's next generation spacecraft

12
00:00:52,026 --> 00:00:55,606
such as the Orion crew exploration vehicle.

13
00:00:56,836 --> 00:01:01,136
STORRM's sensor and state of the art docking
camera will greatly improve the relative

14
00:01:01,186 --> 00:01:06,226
navigation technology needed for vehicles
to safely rendezvous and dock in space.

15
00:01:07,426 --> 00:01:12,536
On flight day 13 of STS 134,
STORRM capabilities will be put

16
00:01:12,596 --> 00:01:18,086
to the test during an unprecedented on-orbit
maneuver piloted by Commander Mark Kelly.

17
00:01:18,406 --> 00:01:22,666
>> Once we undock and separate from
space station we'll do a re-rendezvous

18
00:01:22,666 --> 00:01:27,166
on a different kind of profile that's
optimized to gather more STORRM data

19
00:01:27,166 --> 00:01:33,256
and be somewhat more similar to what Orion
would do during a space station approach.

20
00:01:33,696 --> 00:01:37,086
>> The STORRM test flight represents
an iconic moment in history

21
00:01:37,406 --> 00:01:41,686
as it ties together three generations
of NASA's human space flight programs.

22
00:01:42,136 --> 00:01:46,776
This is the first and only time the space
shuttle, international space station,

23
00:01:46,866 --> 00:01:49,946
and Orion will be able to collaborate on orbit.

24
00:01:50,566 --> 00:01:54,936
>> The three programs together allowed
us a great opportunity to test the sensor

25
00:01:54,936 --> 00:01:57,416
in that relevant space environment
which you're not gonna be able

26
00:01:57,506 --> 00:02:00,626
to basically reproduce on the ground.

27
00:02:00,626 --> 00:02:04,516
>> The STORRM hardware components consist
of a high-definition docking camera,

28
00:02:04,986 --> 00:02:10,706
advanced laser based vision navigation
sensor, an avionics assembly to provide power

29
00:02:10,706 --> 00:02:16,196
and record data, a space certified laptop
computer, and reflective docking targets

30
00:02:16,406 --> 00:02:20,826
that were installed on the international
space station during STS 131.

31
00:02:22,476 --> 00:02:27,136
Acting as the eyes of the spacecraft, the
STORRM system will demonstrate the capability

32
00:02:27,136 --> 00:02:31,116

to automatically seek out a docking
target and define a safe path

33
00:02:31,186 --> 00:02:33,266
for the vehicle to rendezvous and dock.

34
00:02:34,446 --> 00:02:38,476
The retro reflectors on the space
station docking target reflect the light

35
00:02:38,536 --> 00:02:42,546
from the vision navigation sensor
laser beam to provide accurate range

36
00:02:42,546 --> 00:02:44,056
and relative position measurements.

37
00:02:45,596 --> 00:02:50,456
Orion's next generation sensor technology
provides continuous measurements for more

38
00:02:50,456 --> 00:02:55,316
than three miles to within five feet
- three times the range capability

39
00:02:55,316 --> 00:02:57,586
of the current relative navigation sensor.

40
00:02:58,606 --> 00:03:02,586
This sensor technology can also be
used to help those of us here on earth.

41
00:03:03,826 --> 00:03:09,216
Climate and environmental observations,
robotic maneuvering, topographical surveillance

42
00:03:09,216 --> 00:03:13,986
and hazard avoidance systems are just a few
examples of the terrestrial applications.