1
00:00:16,800 --> 00:00:21,360
Supersonic test flights of the Bell X-1\h
rocket-powered aircraft marked the beginning\h\h

2
00:00:21,360 --> 00:00:28,960
of NASA's Armstrong Flight Research Center. On\h
September 30th, 1946, 13 members of the National\h\h

3
00:00:28,960 --> 00:00:33,280
Advisory Committee for Aeronautics arrived\h
at Edwards Air Force Base in California.\h\h

4
00:00:34,080 --> 00:00:43,840
75 years later, NASA Armstrong continues high risk\h
atmospheric flight research and test projects.\h\h

5
00:00:53,120 --> 00:00:56,080
Despite the ongoing pandemic\h
NASA Armstrong continues to\h\h

6
00:00:56,080 --> 00:01:00,000
explore technologies that improve the\h
sustainability of commercial aviation\h\h

7
00:01:00,000 --> 00:01:04,000
and enable new markets for supersonic\h
passenger flight and advanced air mobility.

8
00:01:07,440 --> 00:01:12,560
Lockheed Martin's assembly of NASA's X-59\h
Quiet Supersonic Technology, or QueSST,\h\h

9
00:01:12,560 --> 00:01:17,600
is near completion. The aircraft was transported\h
to Fort Worth, Texas in December for ground testing\h\h

10
00:01:17,600 --> 00:01:22,720
and will begin a trailblazing series of\h
flight tests at NASA Armstrong in 2022.\h\h

11
00:01:23,920 --> 00:01:27,680
Facilities engineers refurbished one of\h
Armstrong's old hangers that will house\h\h

12
00:01:27,680 --> 00:01:31,920
the 100 foot long X-59 aircraft when\h
it arrives at the center for testing.

13
00:01:35,840 --> 00:01:39,680
Engineers are in the process of building and\h
testing new unmanned audio ground recording\h\h

14
00:01:39,680 --> 00:01:44,640
systems that will be used to characterize\h
the X-59 sonic thumps. The Armstrong team\h\h

15
00:01:44,640 --> 00:01:50,240
will create high-resolution pictures of the X-59\h
sonic thump effects as it flies over hundreds of\h\h

16
00:01:50,240 --> 00:01:54,880
automated ground systems placed throughout\h
the urban, suburban, and rural communities.\h\h

17
00:01:58,000 --> 00:02:01,520
NASA's engineers are also in the\h
process of validating a supersonic\h\h

18
00:02:01,520 --> 00:02:07,200
shock wave imaging system and\h
a shock wave measuring probe.

19
00:02:07,200 --> 00:02:12,080
Both will be installed on chase aircraft to\h
gather critical data on the X-59 sonic thump.

20
00:02:19,200 --> 00:02:23,200
NASA and Empirical Systems Aerospace are\h
making significant progress assembling\h\h

21
00:02:23,200 --> 00:02:26,720
NASA's first all-electric\h
X-plane, the X-57 Maxwell.\h\h

22
00:02:28,720 --> 00:02:33,600
NASA Armstrong is advancing the goal of developing\h
distributed electric propulsion technology that\h\h

23
00:02:33,600 --> 00:02:39,760
will make aviation more efficient, quiet, and\h
environmentally friendly. High voltage functional\h\h

24
00:02:39,760 --> 00:02:44,080
ground testing was completed and installation\h
of the aircraft's advanced high-capacity\h\h

25
00:02:44,080 --> 00:02:50,640
batteries will begin soon. Test flights are\h
planned in early 2022. The X-57 second phase\h\h

26
00:02:50,640 --> 00:02:54,960
and eventually third phase designs will set\h
standards for future all-electric aircraft.

27
00:02:58,400 --> 00:03:01,040
scenario Striker 13...

28
00:03:01,040 --> 00:03:05,680
NASA's Advanced Air Mobility National Campaign\h
project continues to help emerging aviation\h\h

29
00:03:05,680 --> 00:03:10,960
markets develop an air transportation system\h
that moves within urban, suburban, rural, and\h\h

30
00:03:10,960 --> 00:03:16,560
regional environments. Testing was conducted to\h
better understand how a future urban air mobility\h\h

31

00:03:16,560 --> 00:03:22,800
vehicles will need to operate within a congested\h
environment. Air taxi testing with Joby Aviation\h\h

32
00:03:22,800 --> 00:03:27,680
prototype aircraft collected information about\h
how the vehicle moved, sounded, and communicated\h\h

33
00:03:27,680 --> 00:03:31,920
with controllers. We're replicating an actual\h
mishap that happened... Armstrong's Resilient\h\h

34
00:03:31,920 --> 00:03:36,560
Autonomy team continues to collaborate with\h
other NASA centers, the Department of Defense,\h\h

35
00:03:36,560 --> 00:03:42,000
the Federal Aviation Administration and industry\h
to create new autonomous aircraft technology that\h\h

36
00:03:42,000 --> 00:03:45,840
could help prevent accidents... Our display\h
is already indicating you can't get over that.\h\h

37
00:03:47,440 --> 00:03:51,840
NASA's Unmanned Aircraft Systems Integration in\h
the National Airspace System project concluded\h\h

38
00:03:51,840 --> 00:03:57,680
its demonstrations of the safe integration of UAS\h
for commercial applications. Aerial inspections\h\h

39
00:03:57,680 --> 00:04:02,480
of gas and petroleum pipelines were simulated\h
during NASA's final SIO demonstration flights.

40
00:04:07,520 --> 00:04:12,560
Armstrong C-20 aircraft equipped with an\h
innovative precision autopilot system,\h\h

41

00:04:12,560 --> 00:04:15,760
worked with the Jet Propulsion\h
Laboratory's Uninhabited Aerial\h\h

42
00:04:15,760 --> 00:04:20,240
Vehicle Synthetic Aperture Radar team to\h
study wetland changes in the Mississippi\h\h

43
00:04:20,240 --> 00:04:24,240
River Delta and track and map the oil\h
spill in Huntington Beach, California.\h\h

44
00:04:27,520 --> 00:04:32,400
After completing critical maintenance in May,\h
NASA Armstrong's DC-8 deployed to St. Croix,\h\h

45
00:04:32,400 --> 00:04:38,160
U.S Virgin Islands for the Convective Processes\h
Experiment studying Aerosols and Winds.\h\h

46
00:04:38,160 --> 00:04:43,440
The mission performed calibration activities\h
for a recently launched earth science satellite.\h\h

47
00:04:43,440 --> 00:04:46,880
The team also conducted studies\h
into the interaction of eastbound\h\h

48
00:04:46,880 --> 00:04:49,360
and westbound winds over the South Atlantic.

49
00:04:52,400 --> 00:04:58,080
NASA's ER-2 completed missions studying ecosystems\h
and natural disasters as well as a summer campaign\h\h

50
00:04:58,080 --> 00:05:02,800
studying how convective storm systems affect air\h
pollution over the stormy central United States.

51
00:05:08,080 --> 00:05:11,040

NASA's King Air B200 science aircraft traveled to\h\h

52
00:05:11,040 --> 00:05:15,760
NASA's Ames Research Center to begin the\h
Sub-Mesoscale Ocean Dynamics experiment.

53
00:05:19,840 --> 00:05:24,000
The NASA Earth Venture Suborbital-3\h
mission will study small ocean whirlpools,\h\h

54
00:05:24,000 --> 00:05:28,400
eddies, and currents to understand the role\h
these ocean processes play in the movement\h\h

55
00:05:28,400 --> 00:05:33,840
of heat, nutrients, oxygen, and carbon from\h
the ocean surface to the ocean layers below.\h\h

56
00:05:37,360 --> 00:05:40,960
NASA Armstrong continues to operate\h
the SOFIA airborne laboratory\h\h

57
00:05:40,960 --> 00:05:44,320
to study the solar system at altitudes\h
above the moisture in the atmosphere.

58
00:05:46,800 --> 00:05:51,840
Key observations in 2021 included investigating\h
water on the sunlit portion of the moon.\h\h

59
00:05:53,280 --> 00:05:56,320
Science deployments were completed\h
in Europe and the Southern Hemisphere.

60
00:06:00,400 --> 00:06:06,640
Perseverance is continuing to descend under\h
parachute. We are coming up on the initialization\h\h

61
00:06:06,640 --> 00:06:12,960
of terrain relative navigation... NASA's Perseverance\h

rover successfully landed on mars in 2021.\h\h

62
00:06:13,600 --> 00:06:18,480
Using the lander vision\h
system and terrain-relative navigation\h\h

63
00:06:18,480 --> 00:06:23,360
system capabilities first tested and\h
validated at NASA Armstrong in 2014.

64
00:06:26,000 --> 00:06:31,040
NASA's Flight Opportunities supported more\h
than 25 suborbital flights. Researchers tested\h\h

65
00:06:31,040 --> 00:06:36,080
a capability that uses small satellites to create\h
a network between spacecraft and ground stations.\h\h

66
00:06:36,640 --> 00:06:41,040
Other demonstrations include a plant\h
experiment aboard Virgin Galactic's SpaceShipTwo;\h\h

67
00:06:43,040 --> 00:06:48,080
an imaging system designed to capture\h
a lander's descent and landing;\h\h

68
00:06:48,080 --> 00:06:52,480
and a payload return capsule able to\h
navigate to a predefined touchdown location.\h\h

69
00:06:56,560 --> 00:07:00,400
Early-career Armstrong engineers were\h
awarded agency level funding to develop\h\h

70
00:07:00,400 --> 00:07:04,720
lunar-dust repelling decoupling magnets\h
as well as ways to instrument supersonic\h\h

71
00:07:04,992 --> 00:07:11,014
parachute canopies used for Mars\h

entry descent and landing. X-15 NASA 1...10 seconds Neil...

72
00:07:11,840 --> 00:07:14,320
As part of our 75th anniversary, simulation\h\h

73
00:07:14,320 --> 00:07:17,600
engineers are developing the Greater\h
Heights virtual reality experience

74
00:07:20,640 --> 00:07:23,920
where users will be able to\h
learn Armstrong's storied history.

75
00:07:27,280 --> 00:07:30,720
That's Armstrong Flight Research\h
Center's 2021 highlights.\h\h