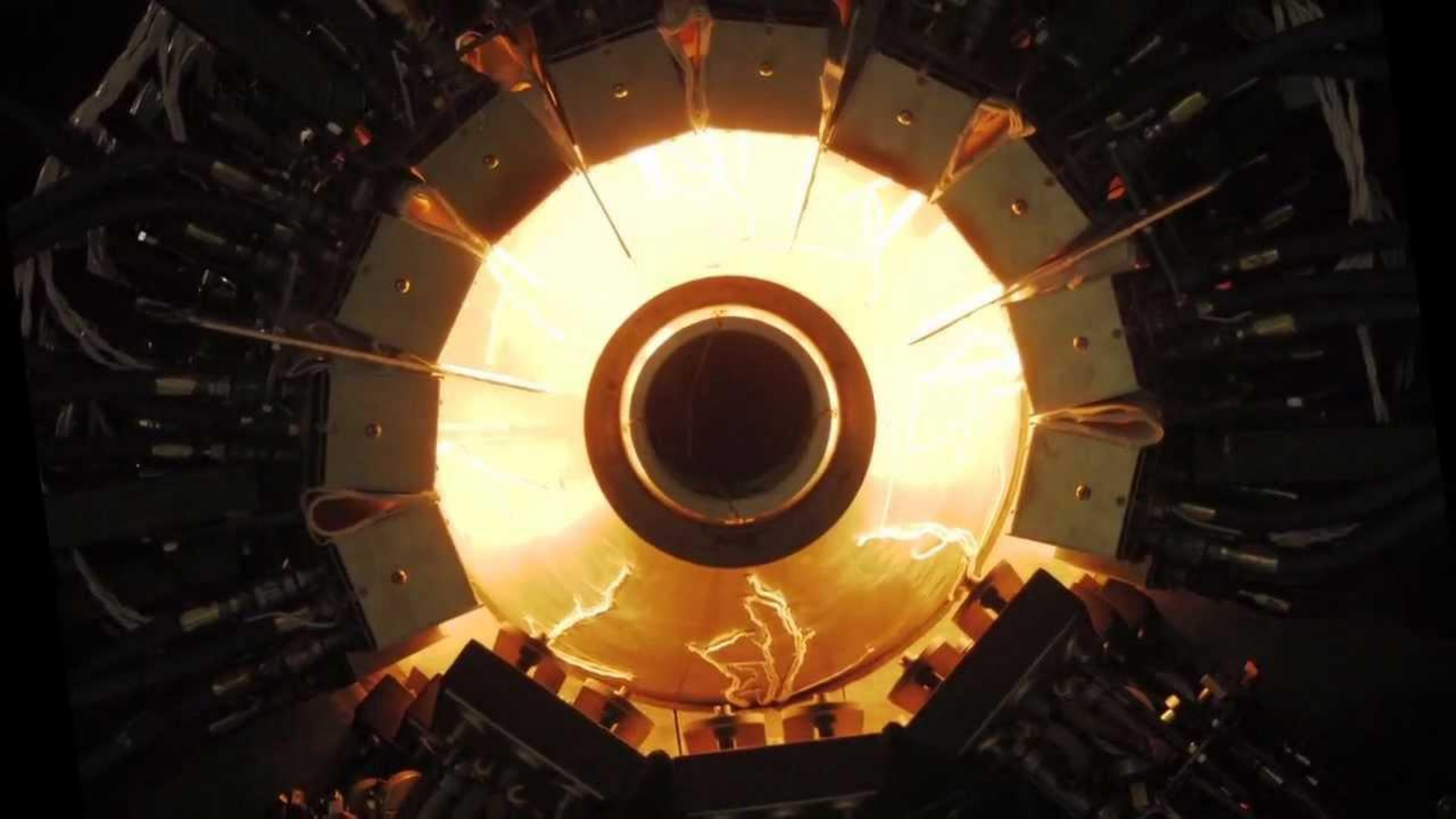

1
00:00:01,800 --> 00:00:08,200
[jet engine]
faaaawoooosh

2
00:00:08,200 --> 00:00:09,000
■

3
00:00:09,000 --> 00:00:14,667
Experience...

4
00:00:14,667 --> 00:00:22,467
Innovation...

5
00:00:22,467 --> 00:00:26,933
Safety...

6
00:00:26,933 --> 00:00:28,800
The Aeronautics Test Program at

7
00:00:28,800 --> 00:00:32,767
Dryden Flight Research Center.

8
00:00:32,767 --> 00:00:36,633
Flight Loads Laboratory

9
00:00:36,633 --> 00:00:41,100
Research Aircraft
Integration Facility

10
00:00:41,100 --> 00:00:45,700
Western Aeronautical Test Range

11
00:00:45,700 --> 00:00:49,900
Support Aircraft

12
00:00:49,900 --> 00:00:54,300
The Aeronautics Test Program at
Dryden Flight Research Center

13
00:00:54,300 --> 00:00:56,567
NASA Dryden's Aeronautics
Test Program

14
00:00:56,567 --> 00:00:59,433
Flight Operations and Test
Infrastructure Project

15
00:00:59,433 --> 00:01:01,133
offers government agencies,

16
00:01:01,133 --> 00:01:03,433
corporations, and institutions

17
00:01:03,433 --> 00:01:05,333
an extensive range
of state-of-the-art

18
00:01:05,333 --> 00:01:08,500
support aircraft,
communication and telemetry,

19
00:01:08,500 --> 00:01:12,067
simulation, and structures
research capabilities.

20
00:01:12,067 --> 00:01:14,300
NASA's Aeronautics
Test Program assets

21
00:01:14,300 --> 00:01:17,300
located at Dryden Flight
Research Center...

22
00:01:17,300 --> 00:01:21,300
advancing technology and
science through flight.

23

00:01:26,433 --> 00:01:28,433
Flight Loads Laboratory

24
00:01:31,467 --> 00:01:33,167
Given its vast physical
resources and

25
00:01:33,167 --> 00:01:35,667
highly experienced
technical staff,

26
00:01:35,667 --> 00:01:36,833
the Flight Loads Laboratory

27
00:01:36,833 --> 00:01:40,100
is a unique, national resource
constructed to support

28
00:01:40,100 --> 00:01:43,633
flight research and tests of
aircraft structures dating back

29
00:01:43,633 --> 00:01:47,600
to the X-15 hypersonic
research program.

30
00:01:47,600 --> 00:01:51,167
At NASA Dryden's Flight Loads
Laboratory, a comprehensive set

31
00:01:51,167 --> 00:01:54,400
of structural test capabilities
can be achieved including

32
00:01:54,400 --> 00:01:58,900
thermal, mechanical,
structural dynamic,

33
00:01:58,900 --> 00:02:02,133
and mass properties testing

of large-scale structures,

34
00:02:02,133 --> 00:02:05,867
performed independently
or simultaneously.

35
00:02:05,867 --> 00:02:09,000
To support testing capabilities,
the Flight Loads Laboratory

36
00:02:09,000 --> 00:02:10,933
utilizes both conventional and

37
00:02:10,933 --> 00:02:13,767
advanced instrumentation
technology.

38
00:02:13,767 --> 00:02:14,900
The Flight Loads Laboratory

39
00:02:14,900 --> 00:02:17,467
utilizes a wide array
of test systems,

40
00:02:17,467 --> 00:02:19,933
including radiant heating,

41
00:02:19,933 --> 00:02:22,367
hydraulic load control,

42
00:02:22,367 --> 00:02:24,400
a soft
support
system,

43
00:02:24,400 --> 00:02:26,000
and a variety of
measurement systems

44

00:02:26,000 --> 00:02:28,600
to support ground and
flight research.

45
00:02:28,600 --> 00:02:31,233
Tests conducted in the
Flight Loads Laboratory

46
00:02:31,233 --> 00:02:33,267
utilize the most
advanced structural

47
00:02:33,267 --> 00:02:35,600
instrumentation
capabilities available,

48
00:02:35,600 --> 00:02:37,400
including
state-of-the-art sensors

49
00:02:37,400 --> 00:02:38,700
and measurement systems,

50
00:02:38,700 --> 00:02:41,133
advanced sensor
integration techniques,

51
00:02:41,133 --> 00:02:44,900
and systems for sensor
characterization and validation.

52
00:02:44,900 --> 00:02:47,767
With its expert staff,
distinctive capabilities and

53
00:02:47,767 --> 00:02:51,533
flight line access, the Flight
Loads Laboratory provides unique

54
00:02:51,533 --> 00:02:55,500

test solutions, all under one
roof, that meet customer

55
00:02:55,500 --> 00:02:58,900
requirements from subsonic
through hypersonic flight.

56
00:03:07,733 --> 00:03:10,733
Research Aircraft
Integration Facility

57
00:03:11,700 --> 00:03:13,233
Another one-of-a-kind resource

58
00:03:13,233 --> 00:03:15,333
offered by Dryden Flight
Research Center's

59
00:03:15,333 --> 00:03:19,733
Aeronautics Test Program, is the
flight simulation capability

60
00:03:19,733 --> 00:03:23,867
located in the Research Aircraft
Integration Facility, known as

61
00:03:23,867 --> 00:03:25,433
the "RAIF".

62
00:03:25,433 --> 00:03:28,367
Designed to house project and
facility management, vehicle

63
00:03:28,367 --> 00:03:32,300
maintenance, and engineering
personnel, the RAIF can support

64
00:03:32,300 --> 00:03:35,633
a wide variety of advanced,
highly integrated research

65
00:03:35,633 --> 00:03:39,000
aircraft through all phases
of a research program

66
00:03:39,000 --> 00:03:41,033
from concept to flight.

67
00:03:44,367 --> 00:03:47,300
PILOT: "Okay, we'll drive
all the way to hold and get some
gas."

68
00:03:47,300 --> 00:03:48,533
Mission Controller: "COPY"

69
00:03:48,533 --> 00:03:50,700
Among its more rare
capabilities,

70
00:03:50,700 --> 00:03:52,533
the RAIF offers high fidelity

71
00:03:52,533 --> 00:03:55,367
real-time and batch
flight simulation,

72
00:03:55,367 --> 00:03:58,400
closed-loop,
hardware-in-the-loop,

73
00:03:58,400 --> 00:04:01,867
pilot-in-the-loop, and
vehicle-in-the-loop verification

74
00:04:01,867 --> 00:04:04,167
and validation testing.

75
00:04:04,167 --> 00:04:07,000

The RAIF offers eleven
different simulation labs

76
00:04:07,000 --> 00:04:08,800
with the ability
to customize for

77
00:04:08,800 --> 00:04:12,400
specific research aircraft
and unmanned vehicles.

78
00:04:12,400 --> 00:04:15,267
The co-location of project
and facility management,

79
00:04:15,267 --> 00:04:18,167
vehicle maintenance, and
engineering personnel

80
00:04:18,167 --> 00:04:20,133
allows the RAIF to
support advanced

81
00:04:20,133 --> 00:04:22,700
aeronautical and
space based research

82
00:04:22,700 --> 00:04:25,267
throughout all phases of
the research program

83
00:04:25,267 --> 00:04:27,267
within a single facility.

84
00:04:37,433 --> 00:04:39,767
Western Aeronautical Test Range

85
00:04:51,000 --> 00:04:53,867
Located at Dryden
Flight Research Center

86
00:04:53,867 --> 00:04:56,700
and part of the Edwards
Air Force Base Complex,

87
00:04:56,700 --> 00:04:59,700
the ATP's Western
Aeronautical Test Range,

88
00:04:59,700 --> 00:05:00,867
or "WATR",

89
00:05:00,867 --> 00:05:03,033
supports flight
research operations

90
00:05:03,033 --> 00:05:05,033
and low earth-orbiting
missions.

91
00:05:05,033 --> 00:05:08,133
Supplying a comprehensive set
of resources for the control

92
00:05:08,133 --> 00:05:10,300
and monitoring of
flight activities

93
00:05:10,300 --> 00:05:12,000
and utilizing the most advanced

94
00:05:12,000 --> 00:05:15,133
tracking and data acquisition
technology available,

95
00:05:15,133 --> 00:05:18,467
the WATR's ability to acquire
and communicate information

96

00:05:18,467 --> 00:05:22,200
to flight and ground crews in
real-time is incomparable.

97
00:05:25,000 --> 00:05:29,067
Fixed and mobile telemetry
antennas receive real-time data

98
00:05:29,067 --> 00:05:32,467
and video signals from research
vehicles and relay the data to

99
00:05:32,467 --> 00:05:34,467
engineers in the
mission control.

100
00:05:36,500 --> 00:05:39,167
The WATR even has mobile
capabilities to allow for

101
00:05:39,167 --> 00:05:41,400
rapid deployment
and remote testing

102
00:05:41,400 --> 00:05:42,833
for support outside of local

103
00:05:42,833 --> 00:05:44,800
airspace boundaries...

104
00:05:44,800 --> 00:05:47,567
like a rendezvous at the
International Space Station,

105
00:05:47,567 --> 00:05:48,767
in which the WATR plays a

106
00:05:48,767 --> 00:05:51,800
critical role in
emergency situations.

107
00:05:51,800 --> 00:05:54,800
The WATR is also the
primary communications support

108
00:05:54,800 --> 00:05:57,800
when the Space Shuttle lands at
Edwards Air Force Base.

109
00:06:10,367 --> 00:06:12,367
Support Aircraft

110
00:06:20,000 --> 00:06:23,167
Dryden Flight Research Center's
fleet of support aircraft

111
00:06:23,167 --> 00:06:26,867
play a number of vital roles in
successful aeronautics research

112
00:06:26,867 --> 00:06:29,133
flight and ground operations.

113
00:06:29,133 --> 00:06:31,600
The aircraft provide safety
chase support for research

114
00:06:31,600 --> 00:06:36,167
flights, mission video and
photography support, and can be

115
00:06:36,167 --> 00:06:39,500
utilized as adaptable research
platforms if needed during

116
00:06:39,500 --> 00:06:43,400
modification and maintenance of
research aircraft.

117

00:06:43,400 --> 00:06:46,467
While performing safety chase
support, pilots maintain

118
00:06:46,467 --> 00:06:49,500
constant visual and radio
contact with research

119
00:06:49,500 --> 00:06:51,433
test vehicles.

120
00:06:51,433 --> 00:06:55,067
Chase pilots monitor external,
flight-critical safety items,

121
00:06:55,067 --> 00:06:58,733
clear other aircraft operations,
and can provide additional

122
00:06:58,733 --> 00:07:00,967
real-time feedback
to the test pilot

123
00:07:00,967 --> 00:07:03,967
and control room personnel.

124
00:07:03,967 --> 00:07:07,667
Another vital component in the
ATP's Support Aircraft program

125
00:07:07,667 --> 00:07:10,700
is the utilization of
photography and video.

126
00:07:10,700 --> 00:07:13,700
Live video is captured
plane-to-plane and transmitted

127
00:07:13,700 --> 00:07:16,767
to control rooms allowing

project engineers to watch the

128
00:07:16,767 --> 00:07:20,433
mission from the most optimal
point of view in real time.

129
00:07:22,733 --> 00:07:24,767
Each of these support aircraft
has unique performance

130
00:07:24,767 --> 00:07:28,133
capabilities allowing the fleet
to meet support requirements

131
00:07:28,133 --> 00:07:31,367
across the entire envelope of
flight research operation

132
00:07:31,367 --> 00:07:34,633
speed, duration, and
altitude ranges.

133
00:07:34,633 --> 00:07:37,833
This diversity also allows the
aircraft to be utilized to meet

134
00:07:37,833 --> 00:07:41,500
pilot proficiency requirements
on multiple platforms, ensuring

135
00:07:41,500 --> 00:07:45,333
Dryden maintains the most
highly qualified, versatile,

136
00:07:45,333 --> 00:07:49,133
and experienced research
test pilots possible.

137
00:07:49,133 --> 00:07:51,500
These pilots also support the

unique flight operation

138
00:07:51,500 --> 00:07:54,733
activities of various Earth
Science research and deployment

139
00:07:54,733 --> 00:07:57,733
campaigns stretching
around the world.

140
00:07:58,800 --> 00:08:02,200
The Aeronautics Test Program at
Dryden Flight Research Center...

141
00:08:02,200 --> 00:08:05,200
advancing aeronautics research
through flight.

142
00:08:08,233 --> 00:08:11,333
With NASA's Aeronautics Test
Program Flight Operations

143
00:08:11,333 --> 00:08:13,633
and Test Infrastructure Project,

144
00:08:13,633 --> 00:08:15,200
you not only get
access to Dryden's

145
00:08:15,200 --> 00:08:17,967
world-class facilities
and infrastructure,

146
00:08:17,967 --> 00:08:20,033
you become part of
NASA's tradition

147
00:08:20,033 --> 00:08:23,033
of success and innovation.

148
00:08:23,533 --> 00:08:25,467
Dryden Flight Research Center...

149
00:08:25,467 --> 00:08:29,000
to fly what others only imagine.

150
00:08:29,000 --> 00:08:31,167
■■