1
00:00:10,400 --> 00:00:07,579
NASA is the national aeronautics and

2
00:00:12,350 --> 00:00:10,410
space administration nasa has many

3
00:00:14,600 --> 00:00:12,360
facilities around the United States and

4
00:00:17,450 --> 00:00:14,610
the people working here have a variety

5
00:00:20,240 --> 00:00:17,460
of jobs to do some work in aeronautics

6
00:00:22,609 --> 00:00:20,250
others concentrate on improving aircraft

7
00:00:24,439 --> 00:00:22,619
engines and still others are involved

8
00:00:27,349 --> 00:00:24,449
with a space shuttle program and Space

9
00:00:33,380 --> 00:00:27,359
Flight at all the center's many

10
00:00:35,479 --> 00:00:33,390
specialized skills are needed the Dryden

11
00:00:37,819 --> 00:00:35,489
Flight Research Center is NASA's primary

12
00:00:40,130 --> 00:00:37,829
installation for flight research we're

13
00:00:41,510 --> 00:00:40,140

located 90 miles north of Los Angeles on

14
00:00:44,060 --> 00:00:41,520
the western edge of the mojave desert

15
00:00:45,319 --> 00:00:44,070
the desert skies are clear and the

16
00:00:48,319 --> 00:00:45,329
weather is good enough for year-round

17
00:00:50,630 --> 00:00:48,329
flight testing also from dryden we have

18
00:00:54,080 --> 00:00:50,640
access to over 20,000 square miles of

19
00:00:56,119 --> 00:00:54,090
airspace for research flying we share

20
00:00:57,830 --> 00:00:56,129
the same dry lake bed surface and hard

21
00:01:00,229 --> 00:00:57,840
runway complex with Edwards Air Force

22
00:01:02,180 --> 00:01:00,239
Base these are the same runways our

23
00:01:04,939 --> 00:01:02,190
space shuttle fleet uses when they land

24
00:01:07,280 --> 00:01:04,949
here flight testing programs began at

25
00:01:09,289 --> 00:01:07,290
Dryden in the 1940s some of these

26
00:01:11,450 --> 00:01:09,299
vehicles may look a bit silly by today's

27
00:01:13,490 --> 00:01:11,460
standards but the many risks taken back

28
00:01:18,200 --> 00:01:13,500
then helped shape flight as we know it

29
00:01:20,120 --> 00:01:18,210
today the early X or experimental series

30
00:01:22,999 --> 00:01:20,130
proved that man could fly faster than

31
00:01:25,010 --> 00:01:23,009
the speed of sound test with the x-15 in

32
00:01:29,330 --> 00:01:25,020
the 1950s and 60s helped the United

33
00:01:32,179 --> 00:01:29,340
States develop a manned spacecraft this

34
00:01:34,490 --> 00:01:32,189
funny-looking bird was the xb-70 during

35
00:01:36,499 --> 00:01:34,500
its flights over Dryden NASA discovered

36
00:01:44,210 --> 00:01:36,509
some things that made supersonic flight

37
00:01:45,980 --> 00:01:44,220
with large aircraft more practical quite

38
00:01:48,050 --> 00:01:45,990

a few wingless vehicles were pulled

39
00:01:51,260 --> 00:01:48,060
through the air or flew from dryden

40
00:01:53,210 --> 00:01:51,270
during the 1960s and 70s NASA was

41
00:01:55,280 --> 00:01:53,220
looking for ways to prove spaceflight

42
00:01:57,859 --> 00:01:55,290
was possible with a reusable vehicle

43
00:02:03,219 --> 00:01:57,869
this research with the lifting bodies

44
00:02:08,180 --> 00:02:05,870
before all-electric flight control

45
00:02:10,400 --> 00:02:08,190
systems and fly-by-wire technology were

46
00:02:12,260 --> 00:02:10,410
put into today's aircraft they were much

47
00:02:14,210 --> 00:02:12,270
heavier and slower

48
00:02:16,340 --> 00:02:14,220
that's because mechanical rods and

49
00:02:19,010 --> 00:02:16,350
connectors used to fly the aircraft were

50
00:02:21,320 --> 00:02:19,020
made of heavier materials now computers

51
00:02:23,360 --> 00:02:21,330
could relay the pilot instructions to

52
00:02:26,180 --> 00:02:23,370
various parts of the aircraft in order

53
00:02:28,520 --> 00:02:26,190
to maintain flight the supercritical

54
00:02:30,530 --> 00:02:28,530
wing concept was also tested at NASA

55
00:02:32,960 --> 00:02:30,540
Dryden it cuts through the air better

56
00:02:41,360 --> 00:02:32,970
helping aircraft crews faster with less

57
00:02:43,160 --> 00:02:41,370
fuel tests today at Dryden include

58
00:02:53,950 --> 00:02:43,170
research with the f-18 high alpha

59
00:02:57,100 --> 00:02:53,960
research vehicle ex31 sr-71 blackbird

60
00:03:00,170 --> 00:02:57,110
f15 digital systems research aircraft

61
00:03:02,450 --> 00:03:00,180
f-16 XL laminar air flow studies and

62
00:03:06,530 --> 00:03:02,460
upper atmospheric studies with the

63
00:03:08,180 --> 00:03:06,540

remotely piloted Perseus the people

64
00:03:11,350 --> 00:03:08,190
working here need to know many things

65
00:03:13,970 --> 00:03:11,360
like math science and computer skills

66
00:03:16,340 --> 00:03:13,980
communication skills are important as

67
00:03:18,650 --> 00:03:16,350
well we need to be able to speak clearly

68
00:03:21,590 --> 00:03:18,660
and to be able to understand our fellow

69
00:03:23,390 --> 00:03:21,600
workers now let's take a look at some of

70
00:03:25,240 --> 00:03:23,400
the people and the labs and shops here

71
00:03:28,160 --> 00:03:25,250
at the Dryden Flight Research Center

72
00:03:30,260 --> 00:03:28,170
this is the thermal structures lab where

73
00:03:32,990 --> 00:03:30,270
people test all aspects of aircraft

74
00:03:35,420 --> 00:03:33,000
parts researchers would rather see what

75
00:03:37,000 --> 00:03:35,430
affects heat and stress have on aircraft

76
00:03:41,690 --> 00:03:37,010
components in a controlled environment

77
00:03:44,590 --> 00:03:41,700
versus in flight also at Dryden we make

78
00:03:47,150 --> 00:03:44,600
finally machined aircraft parts in

79
00:03:49,250 --> 00:03:47,160
another section people build and install

80
00:03:52,940 --> 00:03:49,260
sensitive electronics equipment and

81
00:03:55,190 --> 00:03:52,950
other aircraft parts we maintain

82
00:03:58,580 --> 00:03:55,200
aircraft communications and navigational

83
00:04:00,380 --> 00:03:58,590
equipment technicians in the

84
00:04:01,760 --> 00:04:00,390
environmental testing lab run the

85
00:04:04,190 --> 00:04:01,770
equipment through simulated flight

86
00:04:08,060 --> 00:04:04,200
conditions to ensure it's properly

87
00:04:11,300 --> 00:04:08,070
working before it flies here is our flow

88
00:04:13,190 --> 00:04:11,310

visualization lab or water tunnel model

89
00:04:15,380 --> 00:04:13,200
airplanes are fitted with dive ends

90
00:04:17,150 --> 00:04:15,390
which provide engineers with a way to

91
00:04:20,210 --> 00:04:17,160
see how the dye flows around the

92
00:04:22,430 --> 00:04:20,220
aircraft this flowing dye is similar to

93
00:04:25,190 --> 00:04:22,440
air flowing around the aircraft in

94
00:04:26,070 --> 00:04:25,200
flight adjustments made to the model can

95
00:04:28,170 --> 00:04:26,080
also apply to

96
00:04:30,659 --> 00:04:28,180
the aircraft and help improve flight

97
00:04:32,730 --> 00:04:30,669
this is much less expensive than taking

98
00:04:36,179 --> 00:04:32,740
the aircraft into the wind tunnel for

99
00:04:37,830 --> 00:04:36,189
testing highly-skilled computer

100
00:04:40,619 --> 00:04:37,840
technicians work in our data analysis

101
00:04:43,170 --> 00:04:40,629
facility here's where flight research

102
00:04:45,119 --> 00:04:43,180
data is processed and valuable flight

103
00:04:46,770 --> 00:04:45,129
information is shared with other NASA

104
00:04:49,260 --> 00:04:46,780
centers and test sites around the

105
00:04:51,600 --> 00:04:49,270
country the people working in our

106
00:04:53,869 --> 00:04:51,610
simulation labs need a wide variety of

107
00:04:57,119 --> 00:04:53,879
highly technical and computer skills

108
00:04:59,730 --> 00:04:57,129
aircraft flight simulators and computers

109
00:05:01,800 --> 00:04:59,740
create situations that are helpful for

110
00:05:05,279 --> 00:05:01,810
predicting how the aircraft will perform

111
00:05:07,920 --> 00:05:05,289
in flight our specially equipped control

112
00:05:10,110 --> 00:05:07,930
rooms are manned by experts who monitor

113
00:05:14,520 --> 00:05:10,120

various research gathering missions from

114
00:05:17,939 --> 00:05:14,530
the ground Dryden's life support team

115
00:05:20,010 --> 00:05:17,949
keeps flight suits parachutes oxygen

116
00:05:22,140 --> 00:05:20,020
supplies and other necessary equipment

117
00:05:25,950 --> 00:05:22,150
ready for our flight crews to conduct

118
00:05:28,110 --> 00:05:25,960
their research now as you can see NASA

119
00:05:30,360 --> 00:05:28,120
has helped shape aviation down through

120
00:05:32,999 --> 00:05:30,370
the years in many ways we have sent

121
00:05:35,790 --> 00:05:33,009
people and machines into space to the

122
00:05:37,769 --> 00:05:35,800
moon and are exploring other planets we

123
00:05:39,209 --> 00:05:37,779
have satellites circling the globe that

124
00:05:41,730 --> 00:05:39,219
help people better predict the weather

125
00:05:44,129 --> 00:05:41,740
and information gathered from some of

126
00:05:45,719 --> 00:05:44,139
NASA's computer simulations has even

127
00:05:48,240 --> 00:05:45,729
been used to make artificial heart

128
00:05:50,670 --> 00:05:48,250
valves the Dryden Flight Research Center

129
00:05:53,100 --> 00:05:50,680
is a vital component in the overall NASA

130
00:05:55,439 --> 00:05:53,110
picture what is being flight tested at

131
00:05:57,769 --> 00:05:55,449
Dryden today will most likely have an

132
00:06:01,320 --> 00:05:57,779
impact on tomorrow's air and spacecraft