1
00:00:26,020 --> 00:00:23,570
what if an aircraft could fly without

2
00:00:29,690 --> 00:00:26,030
the rear vertical stabilizer and rudder

3
00:00:32,210 --> 00:00:29,700
what would be the advantages better yet

4
00:00:34,010 --> 00:00:32,220
how could it be done the x31

5
00:00:36,320 --> 00:00:34,020
International test team is helping

6
00:00:38,090 --> 00:00:36,330
explore these possibilities at NASA's

7
00:00:41,720 --> 00:00:38,100
Dryden Flight Research Center Edwards

8
00:00:44,479 --> 00:00:41,730
California x31 team members previously

9
00:00:47,930 --> 00:00:44,489
demonstrated supersonic quasi tailless

10
00:00:50,420 --> 00:00:47,940
capabilities in March of 1994 quasi

11
00:00:53,060 --> 00:00:50,430
tailless is a state of simulated reduced

12
00:00:55,069 --> 00:00:53,070
tail or tail as flight through

13
00:00:57,800 --> 00:00:55,079

destabilizing feedback to the ship's

14
00:01:00,260 --> 00:00:57,810
rudder and ailerons closed-loop

15
00:01:02,720 --> 00:01:00,270
stability and control is then completely

16
00:01:05,420 --> 00:01:02,730
provided by the x31 s unique thrust

17
00:01:06,980 --> 00:01:05,430
vectoring system this work has captured

18
00:01:09,920 --> 00:01:06,990
the interests of the joint advanced

19
00:01:12,710 --> 00:01:09,930
strike technology or jest program group

20
00:01:14,330 --> 00:01:12,720
members from the US Navy Marine Corps

21
00:01:16,460 --> 00:01:14,340
and Air Force have joined together

22
00:01:18,800 --> 00:01:16,470
technology for the next generation of

23
00:01:21,410 --> 00:01:18,810
fighter aircraft the benefits are

24
00:01:23,840 --> 00:01:21,420
decreased weight and drag this will

25
00:01:26,990 --> 00:01:23,850
increase range and make future aircraft

26
00:01:29,630 --> 00:01:27,000
smaller resulting in less expensive more

27
00:01:32,390 --> 00:01:29,640
affordable strike fighter aircraft the

28
00:01:33,740 --> 00:01:32,400
x31 team at NASA Dryden was chosen

29
00:01:36,260 --> 00:01:33,750
because the x31

30
00:01:38,560 --> 00:01:36,270
is capable of gathering this data now

31
00:01:42,200 --> 00:01:38,570
not three to five years in the future

32
00:01:44,899 --> 00:01:42,210
the x31 test team and jest will conduct

33
00:01:47,120 --> 00:01:44,909
a two phase flight experiment to include

34
00:01:49,550 --> 00:01:47,130
simulated power approach and ground

35
00:01:53,120 --> 00:01:49,560
attack maneuvers at low altitude for

36
00:01:55,310 --> 00:01:53,130
multiple levels of destabilization phase

37
00:01:57,490 --> 00:01:55,320
one emphasis will be on validating the

38
00:01:59,960 --> 00:01:57,500

simulation model for tail thus flight

39
00:02:03,380 --> 00:01:59,970
test maneuvers will be conducted at

40
00:02:05,270 --> 00:02:03,390
20,000 feet and 8,000 feet and lower in

41
00:02:07,580 --> 00:02:05,280
both cruise and power approach

42
00:02:11,210 --> 00:02:07,590
configurations at Mach numbers point

43
00:02:13,190 --> 00:02:11,220
three four point six and point eight the

44
00:02:15,380 --> 00:02:13,200
levels of D augmented stability from the

45
00:02:18,740 --> 00:02:15,390
rudder and ailerons planned to be varied

46
00:02:21,800 --> 00:02:18,750
a minimum of between 100 percent tail

47
00:02:25,190 --> 00:02:21,810
off to full tail during this test phase

48
00:02:27,710 --> 00:02:25,200
of roughly 10 to 12 sorties the power

49
00:02:30,610 --> 00:02:27,720
approach tailless flight was initiated

50
00:02:33,140 --> 00:02:30,620
by the IT o test team September 1st

51
00:02:34,850 --> 00:02:33,150
phase two testing will demonstrate the

52
00:02:36,920 --> 00:02:34,860
operational viability

53
00:02:39,980 --> 00:02:36,930
of tailless flight through quasi

54
00:02:42,140 --> 00:02:39,990
tailless testing simulated ground attack

55
00:02:44,330 --> 00:02:42,150
maneuvers and precision approaches will

56
00:02:47,090 --> 00:02:44,340
be flown the objective will be to

57
00:02:50,000 --> 00:02:47,100
provide flight validated data supporting

58
00:02:51,800 --> 00:02:50,010
future tailless designs eight to ten

59
00:02:54,770 --> 00:02:51,810
test flights under these conditions

60
00:02:57,230 --> 00:02:54,780
should meet those objectives upon

61
00:02:59,510 --> 00:02:57,240
completion the x31 test team will

62
00:03:01,699 --> 00:02:59,520
analyze the test data and provide a

63
00:03:03,770 --> 00:03:01,709

final report and briefing of their

64
00:03:06,500 --> 00:03:03,780
accomplishments in quasi tailless

65
00:03:09,710 --> 00:03:06,510
research to the Jass program managers in

66
00:03:11,840 --> 00:03:09,720
washington d.c the IT o test team at

67
00:03:14,960 --> 00:03:11,850
nasa dryden continues to plan for a

68
00:04:10,740 --> 00:03:14,970
reduced tail tailless x31 flight

69
00:04:16,020 --> 00:04:13,320
the x31 international test team

70
00:04:19,229 --> 00:04:16,030
demonstrated supersonic quasi tailless

71
00:04:21,660 --> 00:04:19,239
capabilities in march 1994 quasi

72
00:04:24,110 --> 00:04:21,670
tailless is a state of simulated reduced

73
00:04:26,190 --> 00:04:24,120
tail or tail thus flight through

74
00:04:28,710 --> 00:04:26,200
destabilizing feedback to the ship's

75
00:04:31,050 --> 00:04:28,720
rudder and ailerons at this point the

76
00:04:33,590 --> 00:04:31,060
x31 s thrust vectoring system provides

77
00:04:36,270 --> 00:04:33,600
closed-loop stability and control

78
00:04:38,610 --> 00:04:36,280
tailless flight would decrease aircraft

79
00:04:41,220 --> 00:04:38,620
weight and drag increasing their range

80
00:04:43,500 --> 00:04:41,230
this would lead to smaller aircraft in

81
00:04:45,980 --> 00:04:43,510
the future resulting in less expensive

82
00:04:49,140 --> 00:04:45,990
more affordable strike fighter aircraft

83
00:04:51,330 --> 00:04:49,150
the x31 project at nasa dryden was

84
00:04:55,020 --> 00:04:51,340
chosen because the aircraft can provide

85
00:04:57,210 --> 00:04:55,030
immediate test results the x31 test team

86
00:04:59,430 --> 00:04:57,220
and the joint advanced strike technology

87
00:05:01,620 --> 00:04:59,440
team from the US Air Force Navy and

88
00:05:03,770 --> 00:05:01,630

Marine Corps will conduct a two phased

89
00:05:06,750 --> 00:05:03,780
flight experiment to gather this data

90
00:05:09,409 --> 00:05:06,760
phase one emphasis will be on validating

91
00:05:11,790 --> 00:05:09,419
the simulation model for tailless flight

92
00:05:15,659 --> 00:05:11,800
test maneuvers will be conducted at

93
00:05:18,240 --> 00:05:15,669
20,000 and 8,000 feet and lower in both

94
00:05:22,159 --> 00:05:18,250
cruise and power approach configurations

95
00:05:24,840 --> 00:05:22,169
this test phase began September 1st 1994

96
00:05:27,570 --> 00:05:24,850
phase two testing will demonstrate the

97
00:05:30,600 --> 00:05:27,580
operational viability of tailless flight

98
00:05:32,190 --> 00:05:30,610
through quasi Taylors testing simulated

99
00:05:34,800 --> 00:05:32,200
ground attack maneuvers and precision

100
00:05:37,290 --> 00:05:34,810
approaches will be flown upon completion

101
00:05:39,719 --> 00:05:37,300
the x31 test team will analyze the data

102
00:05:42,930 --> 00:05:39,729
and provide a final report to the Jazz

103
00:05:44,340 --> 00:05:42,940
program managers in Washington DC from