
Phantom Works

1
00:00:03,029 --> 00:00:08,559
It is at least probably 30% more
efficient than the conventional Toobin

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00:00:08,559 --> 00:00:14,499
wing aircraft and for the general public
that has several benefits.  One is lower

3
00:00:14,499 --> 00:00:19,750
fuel economy needs lower cost. So this
kind of aircraft will certainly lower

4
00:00:19,750 --> 00:00:25,000
the cost of air travel for the general
public.  The second reason that it that

5
00:00:25,000 --> 00:00:30,119
fuel efficiency of course is important
is emissions and today of course

6
00:00:30,119 --> 00:00:36,220
reducing carbon emissions is one of our
national objectives as well as reducing

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00:00:36,220 --> 00:00:41,260
pollutants like nitrogen dioxide and
with a highly efficient aircraft like

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00:00:41,260 --> 00:00:46,480
this, this provides a tremendous
improvement and reduction in emissions

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00:00:46,480 --> 00:00:52,360
both carbon and pollutants.  The other
advantage that this aircraft has is by

10
00:00:52,360 --> 00:00:58,090
the way it's configured with the engines
above the fuselage it gives much lower

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00:00:58,090 --> 00:01:02,380
noise than a traditional Toobin wing
aircraft which has the engines below the

12
00:01:02,380 --> 00:01:07,539
wings. So, a great advantage of this
aircraft that we're also looking to find

13
00:01:07,539 --> 00:01:12,219
improvements and make improvements on is
noise reduction by having the

14
00:01:12,220 --> 00:01:15,700
configuration, as I said, with the engines
above the wings.

15
00:01:16,940 --> 00:01:19,760
The flight was structured into three major objectives.

16
00:01:19,760 --> 00:01:22,040
The first one was what we called

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00:01:22,040 --> 00:01:27,070
envelope expansion and in those flights
what we were looking for was to just

18
00:01:27,070 --> 00:01:31,450
understand in general how the plane
behaved during standard maneuvers like

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00:01:31,450 --> 00:01:32,940
takeoff and landing.

20
00:01:34,220 --> 00:01:38,060
The second objective
was what we call the characterization

21
00:01:38,060 --> 00:01:43,810
phase in which we undertook a variety of

maneuvers that looked at, for example,

22
00:01:43,810 --> 00:01:49,210
stall characteristics, that looked at
what would happen when at one engine

23
00:01:49,210 --> 00:01:54,130
might be out and we have asymmetric
thrust and then we also performed a set

24
00:01:54,130 --> 00:01:58,990
of maneuvers is called parameter
identification maneuvers which were ways

25
00:01:58,990 --> 00:02:03,060
in which we can quantitatively
characterize the aircraft performance

26
00:02:04,240 --> 00:02:09,580
The third objective was finally what we
call limiter assaults and this was

27
00:02:09,580 --> 00:02:11,960
probably the most important phase of the program.

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00:02:12,460 --> 00:02:13,960
In limiter assaults what we do

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00:02:14,030 --> 00:02:20,260
who is we program into the software
limits into the aircraft performance and

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00:02:20,270 --> 00:02:25,940
the goal there is to ensure that even if
the pilot under the worst case condition

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00:02:25,940 --> 00:02:31,940
would try to put the aircraft into a
condition that could cause it to stall

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00:02:31,940 --> 00:02:36,830
or spin or something like that.  The
internal software prevents the pilot

33
00:02:36,830 --> 00:02:41,150
from doing that. Thus, maintaining and
ensuring the integrity and the safety of

34
00:02:41,150 --> 00:02:41,920
the aircraft.

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00:02:43,300 --> 00:02:47,760
The purpose of the X-48B
program is to look at the low-speed

36
00:02:47,800 --> 00:02:50,000
handling qualities of this kind of aircraft.

37
00:02:51,580 --> 00:02:52,840
In research that has been

38
00:02:52,840 --> 00:02:56,720
done, one of the things that was
identified was how does a plane like

39
00:02:56,720 --> 00:03:01,580
this handle of low speeds and of course
that's very important for passenger and