
111 08 21 58 736
111:08:21:59:364

1
00:00:11,540 --> 00:00:09,290
NASA and McDonnell Douglas researchers

2
00:00:15,499 --> 00:00:11,550
are developing and testing ideas to make

3
00:00:17,689 --> 00:00:15,509
aircraft safer using NASA's f-15 test

4
00:00:21,320 --> 00:00:17,699
vehicle propulsion controlled aircraft

5
00:00:22,640 --> 00:00:21,330
software or PCA software is being tested

6
00:00:25,340 --> 00:00:22,650
at NASA's Dryden Flight Research

7
00:00:27,800 --> 00:00:25,350
Facility if the complete hydraulic

8
00:00:30,410 --> 00:00:27,810
system on an aircraft fails the PCA

9
00:00:33,020 --> 00:00:30,420
software takes over providing enough

10
00:00:35,330 --> 00:00:33,030
engine control power to steer and safely

11
00:00:38,119 --> 00:00:35,340
land the vehicle until this breakthrough

12
00:00:39,490 --> 00:00:38,129
a complete hydraulic failure basically

13
00:00:42,229 --> 00:00:39,500

rendered a normal aircraft

14
00:00:46,220 --> 00:00:42,239
uncontrollable here's how the PCA

15
00:00:49,670 --> 00:00:46,230
software works the propulsion controlled

16
00:00:52,340 --> 00:00:49,680
aircraft or PCA system uses a mixture of

17
00:00:54,319 --> 00:00:52,350
common sensor signals and the pilots

18
00:00:58,180 --> 00:00:54,329
pitch and roll commands to adjust the

19
00:01:01,340 --> 00:00:58,190
throttles and keep the plane on course

20
00:01:03,640 --> 00:01:01,350
the software generates collective or

21
00:01:07,130 --> 00:01:03,650
equal throttle commands for the engines

22
00:01:09,230 --> 00:01:07,140
without this PCA system throttle only

23
00:01:12,230 --> 00:01:09,240
control is virtually impossible on an

24
00:01:14,359 --> 00:01:12,240
aircraft here the pilot is trying to

25
00:01:16,910 --> 00:01:14,369
maintain a steady approach by manually

26
00:01:19,850 --> 00:01:16,920
controlling the throttles now with the

27
00:01:21,770 --> 00:01:19,860
PCA system on the aircraft is steadied

28
00:01:25,039 --> 00:01:21,780
and is actually taken to a safe

29
00:01:27,109 --> 00:01:25,049
touchdown at Dryden April 21st 1993

30
00:01:31,999 --> 00:01:27,119
without using conventional flight

31
00:01:34,760 --> 00:01:32,009
controllers piloted real-time md-11

32
00:01:37,340 --> 00:01:34,770
simulations incorporating this PCA

33
00:01:39,469 --> 00:01:37,350
technology are currently underway these

34
00:01:42,200 --> 00:01:39,479
tests show that with a PCA system

35
00:01:44,510 --> 00:01:42,210
installed the simulated md-11 commercial

36
00:01:47,359 --> 00:01:44,520
aircraft can be safely landed without

37
00:01:49,670 --> 00:01:47,369
conventional flight controls this will

38
00:01:53,300 --> 00:01:49,680

be invaluable on military and commercial

39
00:01:55,550 --> 00:01:53,310
aircraft of the future NASA and the

40
00:01:57,380 --> 00:01:55,560
aviation industry will continue to work

41
00:02:00,530 --> 00:01:57,390
towards a safer more controllable

42
00:02:03,109 --> 00:02:00,540
aircraft in the future PCA technology is