
NASA
870

1
00:00:00,960 --> 00:00:04,420
[Music]

2
00:00:04,820 --> 00:00:11,320
>>For the most part, DoD has responsibility
for operations within restricted air space.

3
00:00:11,330 --> 00:00:18,150
When you step outside of that military operating
zone, that belongs to the National Airspace,

4
00:00:18,150 --> 00:00:20,800
and that responsibility is with the FAA.

5
00:00:20,800 --> 00:00:28,210
The National Airspace system was created with
a person in the aircraft in mind, so now you

6
00:00:28,210 --> 00:00:33,440
have to think about all those things that
the person would do that the unmanned aircraft

7
00:00:33,440 --> 00:00:36,650
also has to do in order to be safe.

8
00:00:36,650 --> 00:00:41,190
Ikhana took off at Edwards, climbed up to
twenty thousand feet, and then we exited to

9
00:00:41,190 --> 00:00:42,190
the west.

10
00:00:42,190 --> 00:00:46,129
>>ETS nine thirty eight maintain fifteen hundred
feet per minute or greater through flight

11
00:00:46,129 --> 00:00:48,059
level two one zero for traffic.

12
00:00:48,059 --> 00:00:55,150
>>In order to achieve that ultimate goal of
permitting unmanned aircraft to seamlessly

13
00:00:55,150 --> 00:01:01,339
operate in the NAS, we took this step, so this
is a proving out of some sensors that can

14
00:01:01,339 --> 00:01:07,070
basically overcome what's missing from an
unmanned aircraft, and that's a human in the

15
00:01:07,070 --> 00:01:12,900
cockpit with their eyes looking outside and
detecting or seeing other aircraft and avoiding

16
00:01:12,900 --> 00:01:14,180
them.

17
00:01:14,180 --> 00:01:20,140
>>Twenty-six zero-eight...opposite direction descending
unmanned aerial vehicle traffic.

18
00:01:20,160 --> 00:01:22,460
Flight heading two seven zero.

19
00:01:22,460 --> 00:01:28,340
>>NASA eight seventy traffic eleven o'clock,
six miles, westbound, indicates eight thousand

20
00:01:28,340 --> 00:01:33,900
seven hundred, unverified, type unknown, intermittent
transponder.

21
00:01:33,960 --> 00:01:36,560
>>NASA eight seven zero traffic detected.

22
00:01:36,580 --> 00:01:43,920
>>Some of these concepts that are easy for a

person to accomplish are very hard from a

23
00:01:43,920 --> 00:01:46,000
technological perspective.

24
00:01:46,000 --> 00:01:51,360
So we wanted to prove out that we could detect
and avoid other aircraft.

25
00:01:53,240 --> 00:01:57,400
>>November four six niner mike bravo, traffic
four moving to three o'clock one mile, level

26
00:01:57,420 --> 00:02:00,180
at niner thousand, and unmanned aerial vehicle.

27
00:02:00,180 --> 00:02:05,300
He'll be turning to the north in about two
minutes across your nose turning northbound

28
00:02:05,300 --> 00:02:06,360
at niner thousand.

29
00:02:07,220 --> 00:02:09,340
>>Roger looking for traffic niner northbound...

30
00:02:10,120 --> 00:02:12,200
...traffic in sight...

31
00:02:12,860 --> 00:02:14,540
>>...roger thanks.

32
00:02:15,040 --> 00:02:22,160
>>NASA eight seventy traffic twelve o'clock, three miles
eastbound, type and altitude unknown primary

33
00:02:22,160 --> 00:02:25,480
radar target only.

34
00:02:31,320 --> 00:02:38,700
>>With our sensors onboard and also our display
and the algorithms that are behind all of

35
00:02:38,700 --> 00:02:46,010
that, gives the pilot an equivalent level
of capability to the human eye.

36
00:02:46,010 --> 00:02:51,451
>>For this mission, the detect and avoid technology
was awesome, it gave me a bigger picture of

37
00:02:51,451 --> 00:02:53,100
what's out there.

38
00:02:53,100 --> 00:02:57,780
Heavy reliance on air traffic control keeping
me separated from other aircraft, but having

39
00:02:57,780 --> 00:03:02,580
that big picture, we were able to see airliners,
we were able to see general aviation aircraft,

40
00:03:02,580 --> 00:03:06,280
and just being aware what's out there, I think
we were better equipped to do this mission

41
00:03:06,280 --> 00:03:11,010
than any of the manned airplanes that are
out there in the National Airspace.

42
00:03:11,010 --> 00:03:13,150
>>The technology in the past wasn't there.

43
00:03:13,150 --> 00:03:19,490
There wasn't a commerce reason for unmanned
aircraft, but it's there now.

44
00:03:19,490 --> 00:03:23,980

>>We can do long endurance, which is about twenty
to twenty-four hours of flight time, which

45
00:03:23,980 --> 00:03:26,970
if you were sitting in the aircraft, you would
not be able to do.

46
00:03:26,970 --> 00:03:31,430
This demonstration opens up opportunities
for other unmanned airplanes to do new missions.

47
00:03:31,430 --> 00:03:37,050
Pipeline patrol, wildfire studies, ice level
studies, stuff like that that's pretty mundane,

48
00:03:37,050 --> 00:03:40,739
this plane is well suited for long-endurance
high-altitude.

49
00:03:40,739 --> 00:03:46,410
>>You may have heard that Amazon and some other
companies would like to use unmanned aircraft

50
00:03:46,410 --> 00:03:48,410
to deliver packages.

51
00:03:48,410 --> 00:03:52,630
File and fly operations in the NAS would benefit
them greatly.

52
00:03:52,630 --> 00:03:57,650
I think that someday there will be unmanned
cargo aircraft, probably starting with the

53
00:03:57,650 --> 00:04:02,739
oceanic missions, flying unmanned cargo across
the Pacific and the Atlantic.