

Mai, Fox

1. Scramble of 77 / Rebirth AA11
2. Flight path of 77 / mission of 77
- 3.

Fox

1. OAS hold in W105
2. OAS ROE
3. Rebirth
4. Langley Scramble
5. Langley flight path = Comms
6. When, if ever are you aware of FLT AA 77?
7. ROE

• Pg. 53 "We're not going to take
him into W386"

□ review whole exchange → choke that
77

• Pg. 57 "We want Center to
maintain primary control"

• Pg 58 ATC 6 mi west of WH

↳ Δ's Langley path

"Miami, we need to expedite it"

↑ GC Radar scope

↑ 1st saw

↳ AF10

start
p. 47
p. 50
53
57
58
59

p. 59 " — to get time. I don't care how many windows you break."

(p. 47) " I just told Jeremy I want
 them ~~to~~ down in 386 + you've
 got to be
 □ lead all

(p. 50) " All right, here's what is
 going to happen...
 □ lead all

p. 70 " God damn it. I can't even
 protect my NCA."
 "Fly GK set them up to 386."

p. 71 " I need to lay guys three
 now @ NCA. Bravo 089 is making

Maj. Fox 1/22 start time 1010

- passed to pilots to be prepared to engage any susp. targets
↳ getting them in the frame of mind

Susan Marie Rose, SSgt

- e NEADS for 3 yrs
- Data QM, IT
- A flight = came on to floor at 9:30 - 9:45
- Data Quality Monitor (DQM)
- e RDU 02, Ch. 21/22
- Lamarch was pointing out tracks of interest to SR
↳ estab. track on one of them
- "SR"
- Called FAA b/c of the active air defense mission
- Had 2 alt. did have a Mode 3 on 1 of them, the other was a search only.
"search track"
- Brings Avers in to watch Track # ^{mode 3} 1304
1304 was the only one that she was watching (SSgt. Lamarch also here watching)
- "B099 lost off RDU"
- B431 "west of Boston, going eastbound"
↳ "he's squawking code now"

0840:

- Derkins takes the initial call from Joe Cooper (ZBW) mentions that a/c may be put onto b. stations + that coord. expected. B. stations ordered.

0846

- OTIS on B stations launches

1/22/04 Interview with Major James Fox

- Fox reviews his MFR from first visit and notes the following inaccuracies:

① Scramble Orders are implemented by the SD or the SD-tech

- The MCC has the authority to order a scramble.

MCC and sometimes the SD can determine the heading and altitude

② Readiness Posture - 15 minutes or less to launch fighters from a scramble order or from battle station

③ ~~F~~ not on F-16A but on "F-16ADF"

④ - "Sgt Belluscio" not "Biluscio"

⑤ Pg. 7 of 8 - gives the impression that AALL of VA 175 was in "2BW" airspace. → Fox doubts they knew A/C were near New York

and could not confirm plans were in ZBW's airspace.

⑥ MFR says "Quit 24" and it should read "Quit 25"

⑦ Canadian Captain "Nagle" not Belloscio

- Weapons Director = Air Weapons Officer

- WD Technician

- TT - monitor air traffic

10/29

~~Spot Handout~~

Major Fox

1997
NORAD Top Gun

ROTC VI 1990

1991 Weapons Controler Tim Tomball

→ Feb 92 NEACS

→ 14 years

Started as Weapons Control

→ Weapons Admin Office

→ Senior Director

some MCC Training 1998

now MCC

→ now MCC

Weapons

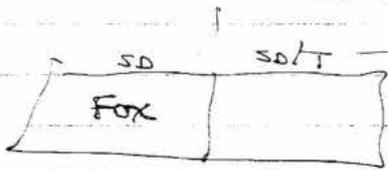
SD

Controler

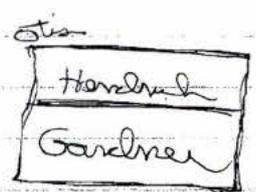
Supervisor

Controler Tech

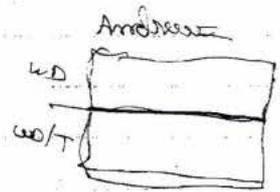
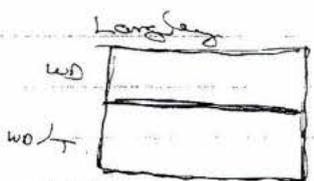
MCC MCC/T



on Radios

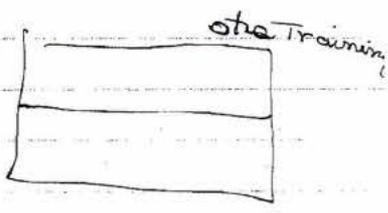


ADMIN
w/ EPA
+ phone calls



work air space

Land Line / Phone Lines



not a position that is manned

FAA controls them back to base.

- NEADS would have knowledge of OTIS and Selfjudge Training exercises even though NEADS would not control.

- NEADS had limited knowledge of armament of selfjudge and OTIS training missions.

- He says OTIS and Fungley Alert fighters were armed with hot guns and maybe AIM-9's.

* - Sometimes they sat alert w/ only hot guns.

- Pre 9-11 mission -> gods was to be launched w/in 15 minutes from scramble order.

- Live fire exercises could be over water or land (if a air to ground training mission).

- Pre-9-11 > Alert jets were required

to set Alert w/ a minimum of
hot guns.

- Sometimes Aim 9¹⁵ → heat seeking ^{missiles}
- Sometimes Aim 7¹⁵ → radar ^{guided} ~~controlled~~ missiles.

- Rarely - Alert birds were equipped w/ hot guns, Aim 9¹⁵ (heat seeking missiles) and Aim 7¹⁵ (radar guided missile).

- longest range ^{strike} capability → ① Aim 120
② Aim 7
③ Aim 9.

~~AAA~~ Aim 120 = AAMRM
= AMRAM missiles →

- He can't recall a case where an Alert bird was armed w/ an AMRAM missile.

- Default position for Alert birds = armed w/ hot guns & or hot guns and Aim 9¹⁵.

E.O. 13526, section 1.4(a)

- Speed of Aircraft

- F-15^{'s}

- Full burner w/ full weaponry - ~~and w/ fuel~~ ^{starts}
Mach 1.1 to Mach 1.2 (Supersonic)

- If you had more than 1 fuel tank you would not want to fly supersonic, (too much drag weight) - you lose the ability to control ~~a~~ A/c somewhat.

- F-16^{'s} could attain about the same max speed as F-15^{'s} = Mach 1.1 to Mach 1.2

- By Agreement w/ FAA → military will not go supersonic over land at < FL 30,000 ft.

- Over Water - allowed to go supersonic 10 miles off coast and > FL 10,000 ft.

air mission
 - When there is an air scramble, FAA restrictions on supersonic speed are suspended.

- Pilots can go supersonic on their own but usually don't w/out NEADS instruction.

- He recalls sending OTIS birds to N.Y. at supersonic speed.

- Novad's Mission Pre 9-11 →
- ① D. V. suspicious A/C entering U.S. Airspace
 - ② - Coordinated w/ Customs on Counter Drug Operations.
 - ③ Wartime role → Air & of U.S. Airspace if the Russians were flying "Bears" down the coast. (protect U.S. ~~air~~ Airspace from attack).
 - ④ Hijackings → ~~to~~ if FAA requested military assistance on A/C in U.S. or entering U.S. Airspace, they would scramble

On the A/C, - Keep 5 mile
 distance from A/C. I.D. aircraft
 - And follow it.

- all fighters A/C have at least 2
 radios in them -

- ↓
- ① radio to talk to FAA
 - ② radio to talk to military (~~the~~
 (Huntress).

- The Flight lead (in flight of 2)
 decides who speaks to FAA
 and who speaks to military.

- F-16¹⁵ Jangle (3 Radios)

1.) VHF

2.) UHF

3.) HF freq → long range

- F-15¹⁵ had 2 radios (VHF and UHF)

(A) — Training exercises geared to first goal of Novad mission — to identify unknown A/C entering ADIZ. (Air Defense Identification Zone).

↳ ~~usually~~ always involved A/C entering U.S. from over water.

↳ never involved identifying A/C and intercepting A/C in friendly territory over the land of U.S. b/c of Posse Comitatus act.

↳ Posse Comitatus prevented NOBAD from intercepting an A/C that ~~was~~ departed from U.S. and was over U.S. land. unless approved at the NMCC level

— At the sector level (VEADS), they would never have considered intercepting an A/C that originated from U.S. airport. w/out NMCC approval.

(B) — Training geared towards Novad's counter drug mission.

→ Exercises involved A/C coming into

simulated exercises.

U.S. from Bermuda, South America or Central America from Over Water. - sometimes involved NEADS following A/C over land.

- No exercises where A/C originated from within U.S. mainland.

- Real World drug interdiction -> ~~sometimes NEADS~~
He is not aware of a real world drug ~~interdiction~~ counter-drug intercept from NEADS.

- He does believe SEADS conducted real world drug interceptions.

(C) Training geared to NORAD'S Wartime mission.

- Exercises involved flying real A/C over W 105 C2 in Undertypes intruder A/C.

Hijack (D) Training exercises pre 9-11 for Hijack mission.

- mostly practiced simulated hijack scenarios at NEADS.
~~at NEADS~~

— may have been live hijack exercises but they would have involved intercepts over the water.

— He does recall a "couple of occurrences" whereby an exercise involved a simulation of a hijacked A/C coming from overseas and the A/C would crash into something on U.S. territory.

→ a few times over last 10 yrs.

— Major Fox involved in the response to the Gulfstream hijacking. → He was the Weapons Controller who controlled the fighter pilots.

↳ Gulfstream originated in Europe, was hijacked and was headed towards U.S. airspace.

— OTIS pilots picked up Gulfstream ~~for~~ at Northeast border of U.S. from Canadian coverage.

Training

- Exercises involving a hijacked A/C being used as a WMD or suicide bomber and entering the U.S. from Overseas.

↓
He does not recall details of exercises.

On 9-11

↳
there was

no
batteries
to
charge

- He says scenario could have involved terrorists.

- He does not recall scenarios where pilots were not controlling the A/C.

(5 minute Break)

- Sgt. Bellesio was one of FOX's SD Techs

- Events of 9-11 - slow day.

- Vigilant Guardian exercise was on hold b/c of Russian Bear Exercise.

- He left Sgt. Powell in Senior Director Position to answer phones.

- He comes back to floor → he hears about hijack (AAL 11) from Sgt. Powell.

if the Battle Commander (man) is not present, the DO ("Director of operations") can give scramble approval.

— DO → lowest level at which scramble approval can be given.

— D.O. on 9/11 → Colonel Mcneely

— Fox has the responsibility to execute the scramble order.

— Fox passes the scramble order to the ~~Senior~~ Senior Director Tech.

— Protocol is for MCC to check with B.C. for approval to scramble.

— MCC Neespyng passes ~~the~~ Scramble Order to Fox.

— Fox passes scramble order to Powell.

— Neespyng said just heard the fighters to N.Y.C.

- Fox was there when Powell told Deskins about the AALL hijack.

- Fox slides into Senior Director Position

- Powell slides into Senior Director Position

- What info. did you get about First hijack? Powell said there was a poss. hijack in 2 BW's airspace, ("real world hijack")

Deskins was on duty probably to handle exercise vigilance situation as in MCC.

- His initial main concerns were

1) Whether FAA wanted NEADS to assist w/ launching of A/C?

2) Where do they want us to send fighters?

A.) Where is hijacked A/C?

B.) Where is hijacked A/C heading?

C.) Speed is just as important as heading.

D.) ~~But~~ Fighters altitude can be manipulated after they are airborne

- The MCC would have looked to the Battle Lab staff Senior person (Col. man on 9-11) to get authority to scramble A/C.

— Scramble Order — FL 290 was chosen b/c it was a good cruising altitude.

— S.D. Tech^{ops} and (W.D. Tech Job mostly)

to get the Fungley pilots back on course.

— FAA knows that the Scramble Order on 9-11 for Fungley was a Real World.

— Another Weapons Team should have been called in to handle the Fungley Scramble.

— The W.D. Tech position is the person who should be watching the Fungley jets on the scope.

— ↓ Once Fungley is airborne → the WD and the WD Tech positions should start looking to acquire

the jets on their radar scopes.

- When FAA hands off Langley pilots to NEADS → then NEADS (Hunters) has radio contact w/ pilots.

- Theoretically the pilot can call NEADS to advise that FAA has them on the wrong heading -

- Declaring AFIO on 9/11 re: getting Langley pilots on course was a huge event,

- Fox only saw it occur once pre 9-11 in his 10 yrs. experience.

↳ the Battle Cab DO (Col. McNeely on 9-11) is the lowest position that can Declare AFIO.

- NEADS still today has no voice page hotline ~~comms~~ comms w/ Kansas City sector, Chicago and Indianapolis.

He thinks the DEN works really well for what it is supposed to do.

— The problem is at the lower level of FAA and WEADS Weapons Controllers, etc.

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MEMORANDUM FOR THE RECORD

Event: North Eastern Air Defense Sector (NEADS) field site visit

Type of event: Second Interview with Major James Fox

Date: Thursday, January 22, 2004

Special Access Issues: Clearance check

Prepared by: Geoffrey Brown

Team Number: 8

Location: Commander's Conference Room, Building 102

Participants - Non-Commission: Major James Fox, E. Michael Chiapas, Deputy

Director for the Contract Disputes Resolution Center, Department of Defense (DoD)

Participants - Commission: John Azzarello, Geoffrey Brown, John Farmer, Miles Kara,
Kevin Shaeffer

Note: Please refer to the recorded interview for further details.

According to Fox, NEADS receives first notification that there is an aircraft of interest through the Identification (ID) section. They pass this information to the Mission Crew Commander (MCC), and the MCC "pipes" that information to the Battle Cab. The Battle Cab communicates a decision to the MCC, and the MCC carries out this decision through the appropriate operations on the floor.

Fox noted to Commission staff that he was not on the NEADS floor when the initial call from ZBW informed Sgt. Powell of a potential hijack of AA 11. Fox entered the operations floor as part of his routine duty. He walked to the Weapons position as Powell was informing Lt. Col. Dawne Deskins of the event.

PANTA Flight:

Fox noted to Commission staff that the initial order for the Otis ANGB Air Defense fighter scramble (Panta flight) directed the flight to New York City.

Fox noted that NEADS received word that AA 11 had hit the World Trade Center (WTC), and the Weapons section did not know if the scramble was necessary any longer. So they were told to bring the fighters into the Whiskey 105 area incase they were needed for another purpose. Fox commented that it was a decision fed by a combination of 1) there being no target and 2) a need to keep the fighters out of heavy Federal Aviation Administration (FAA) traffic.

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Fox noted that when he refers to putting the Panta flight into "a little gap" he is referring to the northwest corner of Whiskey 105. He also noted that he is not sure if the Whiskey 105 area is the exact same geographically today as it was on 9/11. He explained that the areas themselves shift boundaries.

Fox agreed that the transcripts show that the first notification to NEADS of a second hijack is at approximately 9:03 AM. Commission staff commented that at 8:52 AM, the approximate time that the Otis fighters were airborne, and after they were held in the Whiskey 105 airspace, there was no information on the operations floor that could lead to the belief that the Otis scramble could effectively be directed towards UAL 175. Fox would not comment on the motivation for the Mission Crew Commander to move the Otis fighters into a cap over New York City. He also noted that there are no "hard and fast" rules over whether the MCC has the authority to direct fighters without direction himself from the Battle Cab.

QUIT Flight:

In regard to the Langley scramble of air defense assets (Quit), Fox noted that the heading given to the fighters by the FAA was in accordance with standard procedures. Regarding the Letters of Agreement between FAA and NEADS, Fox commented that when the FAA always controls fighters that are over the National Airspace System.

Fox confirmed that the Langley fighters were under FAA ATC control until they entered the Whiskey 386 airspace. He noted once they reached that airspace, they would be handed from the FAA to Giant Killer, and then Huntress would request a transfer of control from Giant Killer to Huntress.

Commission staff verified with Fox a report to the NEADS floor that the MCC was informed of an aircraft six miles east of the White House. Shortly thereafter the Langley fighters were authorized for AFIO (Authorization for Intercept Order). Regarding a following conversation, Fox noted that the Weapons Director Technician, Sgt. Huckibone, was attempting to get the FAA to turn the fighters towards Baltimore.

Regarding the heading given Langely scrambles considering their orders to respond to a scenario over Washington DC (090 for 60), Fox commented that, based on the transcripts and the radar feed, it appears that the FAA followed its standard procedures for passing the flight to the military controllers.

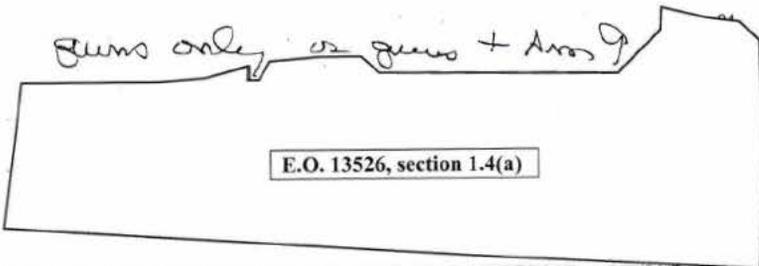
Shoot down order:

Fox noted that at one point he received direct guidance from the MCC to pass to the fighters to be prepared to shoot down any unidentified targets that might propose a threat to any assets they might be protecting. Fox commented that he does not recall any of the details involving an order of Defcon transition or a direction on a change in the Rules of Engagement for the fighters.

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Centers

Guns only or guns + Avionics



E.O. 13526, section 1.4(a)

out Fuel

+ 2 Intel generated

Speed

F-15a

max 1.1 - 1.2

~~fully~~

highest 1.1

fully loaded - no supercruise
too much drag & weight
& ability to control

Langley F-16a

F-16a about same

1.2

one engine much lighter

By agreement w/FAA not supercruise over
land < 30K or in coordinated
airspace

over H₂O at least 10 miles out
10K and above

Active Air cuffs were off
but unless reason to believe
would act w/in FAA procedures

~~absolutely~~

Mission parameters

NORAD Pre 9/11

Looked w/ several & ID all aircraft entering
US airspace if no ID scramble &
identity + coord w/ Customs services
& wartime air defense of U.S. airspace

Hijack

- engaged by FAA & FAA alone
- specific request for mil assistance
- missile ^{intercept for + ID} 5 miles in trail & a surveillance role

E.O. 13526, section 1.4(a)

- if overland or going over land
FAA

Command & guidance up to flight lead
ATC

FIL ADF
VHF
UHF
HF long distance

FIS 2 radios

Back to mission Training Exercises
interest in most exercises
daily SPADES or AFE alert Force Eval
2 in exercise
from w/o over water

Character
Control

over land - no Force Commitment
not allowed to intercept
from Day 1 at NORAD

approval up to NCA level
above NORAD -> JCS

on sector floor would never have
considered intercept over land on
their own

FBI has to make req

↓ wait for intercept authority directly from NORAD

can scramble on own
Scramble "covert" based on in air

CD exercise in from over H₂O Bermuda
fm South

Combin
A/R

GK
Radio
prog

Centers
who
deal
with

Heard
of
Be?

Try real world
Small scale actual flying on aircraft
w/in confines of W xyz

Large Scale Simmed
Beers

Plane as a weapon
Concept of occurrence - simulated
in from overseas
a/c would end up crashing into
something

Dados
-les

- Luft Horse - he controlled the aircraft
got intel far ahead
from FBI from European services
Otis was airborne NE Border

- GK 10-15 K 180 mile Range

never would - Italy

↳ Boston Cont

Hedrick
Gardner

Training & Exercises

For what ever reason they ended up crashing

he had first hand experience on this
 Expected to have pilot in contact w/
 FAA & pilot in contact

9/11 Stan Eoval for Delta Flight that day
 Powell was at the SD Position to answer
 phones

Shortly thereafter, worded to scramble
 etc

Asked for direction
 "Send them to NY"

SW end of the CAPE

Standing there as he was telling the MCC
 Powell to SD/T. Fox to SD

Powell told Doshina initially - she was
 on the ops floor

Details into ID position

knew it was Boston Center

Worried about Scramble and to where
 Location is important - where he is
 heading is a big part of it

Doesn't need altitude
but does need speed & heading

Deshima swapped out w/ Nasipamy very quickly

"Had them to New York City"

mcc would have looked to DO or CO ~~to~~
to Battle Staff to order the scramble
on day-day DO has the authority

mcc just foc is always the DO

Execution of Order

265 True
is 280 Magnator

1252 miss looking for launch
know about WTC
we are looking for a mission
could have cancelled scramble

Deep
Machdog
Dragon } other 6
OTIS fighters

AFIO is a signature

DO

He send FAA / GIANT Keller
all the same to the

When NEADS looks at "FAA System"¹³
that includes GIANT KILLER
LANGLEY TOWER
energizing

~~See~~
More electronic integration w/ FAA.

10/29/03 Interview Major James Fox

— 1990

① — Weapons Controller Training 1991-92
Tynndell AFB

— assigned to WEADS 2/92

— Counter drug ops in Central America

② Weapons Assignment officer → later
became Senior Director → this
position controls the Weapons Section
Weapons Controller → Director
Weapons Controller Tech.

③ — Same Training as a MCE

— He was qualified as an MCE in 1998.

— Today — he works as an MCE

— On 9/11 — he was qualified as an MCE.

— The Senior Director has a Senior Director Technician.

Weapons Director Technicians →
deal with the FAA.

↳ Who sat each position on
9/11?

on 9/11 — 2 Senior Director Technicians
— ① Sgt Jeremy Powell
— ② Sgt. Ron Belluscio

— No Weapons Controllers when
morning started b/c no fighters
were airborne.

↳ Same holds true for Weapons
Director Technicians.

— Usually there ~~is~~ ^{is} ① Weapons Controller
and ① Weapons Director Tech.

— Chain of Command.

↳ MCC (Nozyping)

↳ Senior Director (Fox).

↳ Senior Director Tech. (Sgt. Powell).

↳ ① Weapons Controller and ① Weapons Director
Technician.

- If the FAA wanted to report a hijack, then the I.D. position or MCC position would have been the best place to call.
- Why did FAA call Sgt. Powell at the Weapons section?
 - ↳ B/c FAA deals with ~~to~~ NEADS weapons section on a daily basis.
- Weapons Director = Senior Director.
- One Team = (~~used~~ 1 Weapons Controller and 1 Weapons Director Tech). usually does not control more than 4 planes at one time.
- on 9/11/01 → Vigilant Guardian Exercise → Controlled by Huntress
- Other fighter Exercises
- Self-judge fighter training Exercises
- not controlled by Huntress
- controlled by FAA → FAA clears them to restricted military airspace so they can play. When they are done,

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MFR 04016783

MEMORANDUM FOR THE RECORD

Event: North Eastern Air Defense Sector (NEADS) field site visit

Type of event: Interview with Major James Fox

Date: Wednesday, October 29, 2003

Special Access Issues: Clearance check

Prepared by: Geoffrey Brown

Team Number: 8

Location: Commander's Conference Room, Building 102

Participants - Non-Commission: Major James Fox, Captain Daniel L. Warnock

Participants - Commission: John Azzarello, Miles Kara, Geoffrey Brown

Note: Please refer to the recorded interview for further details.

(R)

Background:

Fox entered the military through ROTC in 1990. He received his first assignment in 1991 at Tindale Air Force Base (Tindale AFB) in Weapons Control and Training. In February of 1992 he completed his training and arrived at Griffis Air Force Base (Griffis AFB) with NEADS. He was involved in Desert Shield and Desert Storm; as well as in counter-drug operations in Panama.

He became a Weapons Assignment Officer, which is the same as a Senior Director. He has been trained in various positions, including Mission Crew Commander (MCC). Due to 9/11 and the increase in operations tempo, Fox needed to dedicate most of his time to Weapons. Today Fox is working full-time again as a MCC.

The Senior Director of the Weapons Section, which is composed of the Weapons Controller and the Weapons Controller Technician, monitors a number of teams of controllers who are responsible for military aircraft. The Senior Director's immediate job is to monitor the Senior Director Technician (SDT). The SDC monitors the Weapons Controllers Technicians who are handling direction with the FAA and with all phone calls that need to be coordinated so that the controller can stay on the frequency. Lt. Powell, then Sgt. Powell, was working as a S. Dir. Technician, and so was Ron Bilicia on 9/11.

The Weapons Director Technician is in communication with the FAA and coordinates all issues over airspace. The Weapons Controller speaks directly to the military aircraft, and directs those aircraft on their route progress through all airspace. The progress of orders is from the MCC to the Senior Director, then to the Weapons Controllers, then to the Operations floor.

Air defense mission:

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Fox understood NORAD's air defense mission as a task to survey and identify all aircraft entering United States airspace. If NORAD was unable to identify an aircraft, then the mission would be to scramble and actively identify. NORAD is also tasked to work with customs on counter-drug operations. Thirdly, NORAD is tasked with defending against a coordinated air attack on the United States.

The NORAD hijack response mission is triggered by the FAA. NORAD's standard operating procedure is to wait for a call from the FAA specifically requesting military assistance. If the FAA does not request assistance, NORAD does not scramble. After a scramble within US airspace NORAD is tasked with surveillance by air at a five mile distance from the target. The mission only changes by agreement with Canada. In Canadian airspace the air defense flight would maintain a trail instead. **E.O. 13526, section 1.4(a)**

If an aircraft is intercepted over water, NORAD controllers are in charge of the fighters. If it is in airspace over US land, then the FAA does the controlling to create air space clearance; but NORAD still maintains what is referred to as "command and guidance" by a constant radio link.

Fox was a Weapons Controller during the Luftahansa hijack. On that day NEADS received intelligence "far ahead". He was told by a senior director to look at regulations on hijacks. He was told the hijacked aircraft had intentions of entering US airspace, so Fox reviewed the hijack exercises. He remembers later on in the day having Otis AFB aircraft off the coast that took the escort from the Canadian fighters and escorted the hijacked aircraft to a landing. Fox does not recall many of the details.

Awareness of national military assets:

Fox had awareness of where the Selfridge missions were taking place on 9/11. The SD for Weapons often keeps national airspace situational awareness since at times the Weapons Controllers at NEADS control flights out to different areas of the country. Though, pre 9/11 there NEADS had a limited knowledge of the exact weapons configuration of their alert aircraft. He believes it was the "default standard" to have a "guns-only" status, and one fuel tank. The alert fighters would possibly have AIM 9s as well. On 9/11 however, the "birds" at Otis AFB were postured with more weapons and three fuel tanks because of the Russian Bear exercise. Fox noted that when a scramble order is issued, the alert fighters must take off as is.

Fox noted for Commission staff some of the technical issues regarding the control of air weapons assets. He noted that A10 fighters are considered "fighters" even though they primarily serve an air to ground function.

The air alert fighters would often have AIM 9s, which are heat seeking, and called "Sidewinders" or "Heaters". Sometimes alert fighters would have AIM 7s as well; which are a radar guided missile and also called "Sparrows". The AMRAAM (Advanced Medium Range Air to Air Missile), or AIM-120, is a medium sized weapons that has its

own targeting mechanism that is all-weather, and beyond-visible range. AMRAAMs are also called "Slammers".

E.O. 13526, section 1.4(a)

At that point it goes to a "pitbull" flight, which is self directed. At this point in the targeting process, the AMRAAMs internal radar tracks to the target that was designated by the fighter's radar by the pilot.

The F15s can obtain a speed of Mach 1.1 if fully loaded. But when there is more than one tank on the fighter it creates a large amount of drag, which in turn compromises the pilot's ability to control the fighter. Thus, usually when a fighter goes supersonic and is fully loaded it drops two of its tanks beforehand.

Fox believes the F16s armed at an alert mode would be have a max speed of roughly 1.2 mach. He also noted that supersonic speed and maneuverability is not very different between the F15 and the F16.

During day to day operations by agreement with the FAA fighters will not go supersonic overland at an altitude of less than FL 300. There are airspace sections in the US where this can be coordinated. And at further than 10 miles outside the coast a fighter can go supersonic at 10,000 feet and above. These agreements between the FAA and the military do not completely apply in active air scrambles if there is intelligence or reason to believe it is a dire situation. Fox underscored this point by saying that on an active air defense mission the mission is paramount. Pilots have the capability to make their own decisions regarding what is necessary to fulfill their mission; but if a flight goes supersonic the order comes through Weapons. And Fox does recall voicing for the Otis to go "super" directed towards New York on 9/11.

Scramble procedures:

Fox noted to Commission staff that scramble orders are always directed by either the Senior Director or the Senior Weapons Director. Further, he explained that there are "shout lines" used between different sections on the floor to coordinate timely information. And that these lines are used in a scramble situation. This timely coordination is practiced and the NEADS readiness posture is to have fighters airborne after a scramble is issued within 17 minutes.

Fox explained that once fighters are in the air, both the FAA and HUNTRESS only speak with them when they have guidance to give. The flight lead would be in charge of the flight's configuration. The lead can have both frequencies in ear, and direct which member of his flight he is speaking with. For example, the flight lead could have one radio monitoring and communicating with the FAA, and another radio to his

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wingman. In the same flight, the wingman would have his flight lead in one radio, and HUNTRESS in the other. Fox commented that this would be a standard configuration.

When considering in flight communications with multiple fighters in the same flight, Fox noted that it is not a confusing. For example, the Langley air defense flight had three F16 ADF (Air Defense Fighter) aircrafts. Those fighters just continue the same system noted above with the third member of the flight. Fox noted that the F16A (a version of the F16) has an UHF, a VHF and a HF radio. It is unique for a fighter to have three radios, but the third is not used for the same type of communication as the other two. In fact, the fighters would rarely use the HF radio. That HF radio is primarily used speak back to a command post at great distance. The Langley aircraft had this (F16A versions); but the vast majority of air defense fighters are F16s are F16Cs.

The basic range for fighters at 10 to 15,000 feet and above for communications is roughly a 150 mile range to one of NEADS radio sites along the coast. If an aircraft is over water the communication is passed through Giant Killer. If over land the communication goes through radio sites at the Centers.

Scrambles are often voiced but after a target is identified there can be a "cancel scramble" order voiced. He further noted that it is not statistically considered a scramble unless the aircraft is actually airborne.

Fox explained to Commission staff that voicing a "vector" may indicate there is an idea of an actual track of where the target is headed. The FAA coordinates the vector for the fighter to avoid aircraft. The FAA inserts a flight plan of what the fighters want into the FAA computer systems so that the path of the fighters can be cleared. Fox expressed to Commission staff that if the FAA believes it may be difficult to clear an area, and may take a period of time, the military would want this information; but, based on his experience, the FAA would probably not communicate the information.

Fox explained that ideally aircraft are scrambled to a projected intercept point as opposed to a current location of the target.

Fox explained that when the scramble line is activated all necessary facilities are simultaneously notified.

Fox noted to Commission staff that he did not know where the nearest "hot gun" Canadian fighters that could be scrambled were on 9/11. But since Canada is part of NORAD Fox does not have expect the process for drawing on Canadian assets to be any different than that for drawing on assets from SEADS or WADS.

Exercises and training:

Fox noted to Commission staff that almost every training exercise is for air defense. Their daily "Spades" or AFEs (Alert Force Evaluations) are individual scrambles out of a certain base to ascertain a target or short two hour intercepts to

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practice identification methods. A small exercise like this or a large scale Vigilant Guardian type exercise all deal with in part identification of an aircraft entering US airspace from over water.

By posse commatadus NORAD was not allowed to intercept aircraft internal to the United States. That mission was considered a law enforcement mission. Fox noted that he was trained to that point of understanding. He noted that this understanding stems from his early training. It was always the understanding at the Operation Floor level that to intercept something that originated in US airspace the intercept would have to be approved from a level over NORAD (ie. Joint Chiefs of Staff or National Security Council). Fox noted the operational knowledge at NORAD was that it would never consider taking that action on its own authority. At NEADS, they would seek higher command guidance. Fox made the distinction to Commission staff that it is that authority to intercept that needs higher authorization; but that scrambles can be order from NEADS.

Training missions practiced for counter-drug operations are only practiced on aircraft coming in [redacted] E.O. 13526, section 1.4(a) [redacted] In Fox's recollection most of this exercise was "in house". In the event of an actual intercept coordination with FAA would begin as an aircraft comes [redacted] E.O. 13526, section 1.4(a) [redacted] Fox commented that NEADS may give operational radar support on tracks over the Maine/Canada airspace to the FAA.

Fox does not know of a counter-drug intercept that has happened real world at NEADS. He commented that NEADS personnel have been trained, but Fox has never participated in one of those exercises; he does know that SEADS has a greater counter-drug focus.

Fox stated that small scale exercises include scheduled training in the controlled military airspace off the coast. Large scale exercises are completely simulated and would include the entire coordination and steps between the initial intelligence of an event and the deployment response. To Fox's knowledge, Vigilant Guardian was building towards a large scale simulated exercise.

Fox does not recall any real world, actual flying exercises coordinated with FAA to practice hijack procedures. Any live exercises would happen over the off-coast airspaces. Fox believes there may have been live intercepts in practice over the coast that would be with the purpose of practicing hijack scenarios.

Fox recalls a small number of occurrences in which a simulated intercept of a hijacked aircraft coming in from over seas "crashes into something" in US territory. It was always an aircraft coming in from over water. He does not know what the reason for why these flights might have been simulated to crash. He believes that disgruntled pilots may have been a scenario that was exercised. Fox does not recall an exercised situation.

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that the pilots were not controlling the aircraft, or a situation practiced in which there was no communication from the aircraft. Fox noted that other MCCs may remember these scenarios in more detail, or may have been involved with other exercises that interest the Commission.

9/11:

Fox recalls that on 9/11 the Weapons Section was preparing for the start of the Vigilant Guardian exercise. He commented that because of this they had a more robust staff than would have been normal, but it is a requirement that there be a dedicated team of controllers per group of aircraft. And since a mission can vary in size from a pair of fighters to as many as twenty aircrafts, including tankers and other types of military aircraft, the number of controllers reporting and working at the Weapons Section at a given time can vary. Powell, Gardner and Bilucio were all sitting at the Weapons desk on 9/11.

The Vigilant Guardian exercise that NEADS had been preparing for was on hold already because of the Russian Bear activity. They were expecting it to begin, and Fox went to perform some administrative duties. As Fox entered the floor, Powell was informing Colonel Deskins (then a Major) of the possible hijack. Fox understands that the Federal Aviation Administration (FAA) was attempting to locate a hijacked aircraft on their radar, and thus made the appropriate call to the Senior Director Weapons Technician (Powell) to notify NEADS of the situation. Deskins was on the Operations floor at the time. That is why Powell spoke to her instead of Nasypyany. Powell came back to the desk and plugged into the SD Tech position. Shortly thereafter the Weapons position was voiced to scramble Otis. He remembers asking for a target for the scramble. Eventually the MCC said to direct the fighters towards New York.

Most of the details once the Weapons position knew of the possible hijack would have come into the Huntress ID position. Fox only knew the hijack was in Boston Air Route Control Center (ZBW) airspace. He was not informed of the details. At that point, at the Weapons position, they were primarily concerned of where the scramble was to be from, and where the fighters should go. Since it takes a period of time to get the aircraft airborne, it is important to initially know where the aircraft is going. Fox says he does not need the altitude, since that can be adjusted. The speed is important though so that the heading for the intercept will be accurate.

Fox remembers that by the time the scramble order was given Nasypyany was in the Battle Cab, and Deskins was no longer there

Once the FAA asks for assistance, if the Battle Commander is not available, the Director of Operations (DO) has the authority to scramble aircraft. Colonel McNealy was the DO on 9/11. It would be procedure to check with the Battle Cab and the DO before an MCC would issue an order to scramble. Fox has seen the scramble order voiced before without the DO, but the MCC would immediately be informed.

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Once Fox received the scramble order on 9/11, he told Powell to activate the scramble line and head the Otis alert fighters towards New York City.

They brought the fighters out over water since that was an easier route for command, guidance, and control from Huntress ID. Coordination with the FAA regarding clearing airspace over the United States may have hampered the progress of the fighters if the fighters had been vectored to approach New York City over land.

Commission staff began to use documents reflecting the scrambled fighter tracks to assist the interview:

On 9/11 Fox had limited information. Fox explains to Commission staff that the vector given to the fighters was off magnetic north (pilots always operate off of magnetic north). The basis for Flight Level 290 (FL 290) is that it is simply an appropriate altitude for fuel efficiency. That is a default altitude if there is limited information on the reason or destination governing a hijack. When he launched the fighters, he asked the MCC for information. Nasypany only gave the information to head them to New York City, and, according to Fox, it is possible that Nasypany may have had more information than what was given to Fox.

The fighters left Otis headed towards the Northeast which is the quickest route out from the Otis runway and alert barn. They performed a tight turn, and moved towards their assigned vector. They were told to hold south of Long Island, and Fox directed the WD Tech to pick up a new heading in line with this.

Commission staff showed Fox a rough transcript from the MCC position, and began to play an audio file provided to Commission staff by NEADS labeled DRM1 DAT 2 Channel 2 MCC:

According to the transcript at 8:40 AM, MCC Nasypany asked Fox to scramble Otis. Nasypany told Fox to scramble to a Z point north of NYC. Major Fox explained that a "Z" track is a track that is put into the Q radar system that is not meant to move. It is meant to be stationary and mark a position for an aircraft.

At 8:52 AM on the tape when the information that an aircraft hit the WTC reached Fox, he looked for more updated information as to whether or not the scramble mission was still necessary.

At 8:54 AM Fox was told to continue the fighter's flight towards John F. Kennedy (JFK) airport. Fox does not remember if the fighters were airborne yet. But he did suggest to Nasypany that the quickest route was over water. Nasypany told him to work with the FAA on clearing aircraft. Fox noted to Commission staff that the traffic in the area at that time is extremely heavy and would need to be cleared.

The controllers at Huntress actively attempted to coordinate with the fighters to maintain the best course for intercept and to stay away from FAA controlled aircraft. The

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control of the aircraft in air was through the FAA, and at 8:55 the fighters were told to go to JFK at a heading of 260. This heading would put the fighters south of JFK. Fox decided that if the fighters followed a course to place them in one of the warning areas, they could hold outside of New York and wait for an accurate position. Fox reiterated to Commission staff that the reason to give the scrambled fighters from Otis AFB a FL 290 is most likely independent from the last known altitude of AA 11.

Fox was informed that the last known position for the AA 11 was 20 miles south of JFK, and attempted to get other accurate information on the flight.

According to the transcript at roughly 8:56 AM they were informed that AA 11 was the aircraft that hit the World Trade Center (WTC). Fox believes this information came from a ZBW call to Huntress that informed them that ZBW was almost certain the flight that hit the WTC was AA 11.

Fox estimates that if at 8:53 FAA had passed situational awareness to the military regarding UAL 175's location, the Otis fighters "barely" would have gotten to New York City. Fox continued this line of thought and noted that they would not have been able to 1) find the aircraft (fighter radar would not have been able to pick up the aircraft in the midst of the buildings in New York City, and the pilots would have had to visually make contact with the aircraft); 2) intercept the aircraft; and 3) receive permission from a national command authority to shoot. Fox explained that the lower an aircraft flies the harder it is for fighter radar to distinguish the target from terrain and buildings. It would have been "nearly impossible" for the radar to pick up the aircraft. The process would have potentially taken longer than the actual flight from Otis.

"Sometime" during the initial events there was a CNN feed piped into the Battle Cab. That morning Fox does not recall seeing the second impact, or CNN. After ZBW reported that they believed AA 11 crashed into the WTC to NEADS, Fox does not recall discussion that AA 11 was not the airplane that hit the WTC.

Fox was receiving information regarding the hijack through the MCC. It is the MCC's job to continually inform the Weapons Desk on any amplifying information so the Weapons Desk can acquire its target, and facilitate the intercept. The point at which the MCC communicates to the Weapons section that fighters from Langely need to be scrambled and headed towards Washington is Fox's first indication that "there is more going on".

According to the transcript, between 9:03 AM and 9:04 AM Major Nasypany told Fox that there was a report of "a second hit" on the WTC. The fighters at this point were off the tip of Long Island. Fox guessed that the fighters were roughly 100 or 120 miles out of New York City. Fox explained to Commission staff that he might have known that there were additional hijacks, but he does not have any awareness of the reports of additional hijacks being associated with AA 11.

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At 9:09 AM Langley AFB was ordered to "Battle Stations", and to scramble at 9:24 AM. Fox recalled that the fighters may not have been scrambled until the concern emerged that there might have been a third hijacked aircraft headed to Washington; so not until that information came through was the actual scramble ordered. Fox noted to Commission staff his opinion that putting Langley AFB at Battle Stations was a precaution. He further noted that it is common practice that as soon as one tactical action is taken, the next steps are prepared for. Langley AFB would have been put on Battle Stations to relieve the Otis AFB fighters. Most likely the order would have come from the Battle Staff to the MCC. According to Fox, Sgt. Satino may have been the technician talking to Quit 25 (the Langley AFB F-16s), and sitting with Sgt. Huckibone.

Fox explained that the Langley AFB fighters usually scrambled to a route directly east of their take off and would enter a corridor ten to fifteen miles off the coast before they turn east and are handed to Huntress. According to Fox this expectation for the Langley AFB fighter route was based on the pattern of direction set by the FAA. Fox hoped that on 9/11 the fighters would get turned immediately north to 010 because of the seriousness of events. But they were vectored at 090 for 60 (miles), which would take the fighters to the corridor. They would enter the corridor and at some point be released to Huntress. That information is based on Fox's knowledge of the Langley airspace. Fox also noted that the Langley fighters were F-16s. The F-16 ARFs can carry AIM 120s, but the F-16 Cs cannot. The exact load is recorded on transcript, but this information will dictate what tactic the Weapons desk may use if an F-16 is given an order to engage a target.

Fox continued and noted that "whenever" the data was noticed that the fighters from Langley AFB were tracking east as opposed to north was when Fox and the Weapons section knew the fighters were not on the north heading. That deviation from the optimal heading came through the FAA in order to put the fighters in the clear airspace corridor off the coast.

This circumstance makes an appearance that the FAA did not send the fighters on the course Huntress requested. Fox noted that since the FAA "owns" the airspace, and "they can do as they want". Fox explained to Commission staff that historically the nation builds up its military prioritization in time of war. From an FAA point of view, short of the preparation for all out war, the FAA reserves the right to what they want until the point at which they decide the military is a priority. It would not surprise Fox to learn that Washington Center did not have the same sense of urgency that was being conveyed by ZBW, or by the scrambled fighters.

According to the transcript at 9:37 AM the Langley fighters were turned off the 090 (degree) heading, and changed to a northern heading. Fox noted that NEADS normally gave the FAA a little leeway when it involves directing fighters away from air traffic, so NEADS probably gave the FAA some space moving the fighters on the 090 degree heading, but eventually the WD Tech or the SD Tech would have moved for the fighters to take the correct course - to "snap north" - quickly. Fox would expect the pilots to check in with NEADS regarding the heading. But the area they would pass

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through is extremely overlaid. So it would not surprise Fox if out over the coast – the mouth of the James River south of Langley and north of Oceana – not over open water, would be the first area the pilots would have the chance to speak with Huntress. If the pilots are jumping between the FAA agencies on the radio they may not have had the time to speak with NEADS. For Huntress to know they were off course would take either a notice of the change in course on the Huntress radar or for the pilots to notify Huntress.

Fox noted that as the other scramble (Langely AFB F-16s) was called there should have been another Weapons team brought in. Fox is not absolutely sure if another Weapons team was brought in at that point. To set up for a new WD team is complicated – a necessary step to control another air defense flight. It does take a solid five minutes before the team begins to observe radar data. The WD relies on Command Post calls that fighters are airborne. The second notice would be an FAA call to transfer the fighters over (that would be the latest). Ideally when the Command Post calls to inform that is when the WD Tech and WD begin actively watching the radar. Fox noted that after the scramble from Langley the only instructions that the Weapons Desk was asked to give the fighters was to head them towards Washington, DC.

An FAA transcript indicates that at 9:32 AM Huntress asks that the fighters start to move towards Washington via the Baltimore area. After reviewing the audio file, staff learns that the direction given is for BWI (Baltimore Washington International Airport). The route vector given is 230 degrees. Fox noted that as far as the range on the old Q radar system Baltimore and Washington are for all vectoring purposes co-located. Quit 24 mentioned it was squawking Quad 7 (beacon code 7777), which is an indication that the pilots had been given the authorization to intercept (AFIO).

Declaring AFIO and Quad 7 is a statement that the pilots are excepting all responsibility for any air incident resulting from the pilots clearing their own airspace. Quad 7 and AFIO had only happened once previously in Fox's entire career. The lowest level that Quad 7 and AFIO can be declared is from the DO (Col McNealy) position. Fox believes prior to September 11th AFIO had only been declared once.

Regarding a military controller and guiding a fighter or fighter flight that has declared AFIO, Fox commented that the military controllers have to communicate to the fighters the traffic ahead of the fighters at numerous scopes. The positions are trained to do this, but are not "federally qualified" so it can be difficult for the controllers. The flight leader confirmed with Huntress that his full team was squeaking Quad 7.

Shoot down order: According to the audio recording that Commission staff and Fox reviewed, the armament configuration on 9/11 was referred to around 9:20 AM as "F-15s with zero (refers to AIM 120s), 2 (AIM 7s), 2 (AIM 9s) by gun (armed guns)". The expression used for how the fighters would engage the commercial airliner if a shoot down order had been given was "Heaters in the face"; this indicated the suggestion that the fighter head towards the target aircraft and fire heat seeking missiles. At some point during the day NEADS received authority to shoot down aircraft that were deemed

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hostile by CINC, NORAD, and/or others. He believes this was sometime after the Pentagon impact (9:37 AM). Without reviewing more transcripts, Fox stated that the MCC was most likely thinking ahead when he gave the above statement. (audio file 49:00 mark)

Military / FAA relations on 9/11:

NEADS deals with Boston, Cleveland, New York, Washington and Minneapolis Air Route Control Centers. All those sectors have direct hotlines. They rarely spoke with Chicago, and never to Indianapolis. NEADS worked with ZBW often; so probably coordinated the best with ZBW on 9/11. Centers like Washington and (New York Air Route Control Center) ZNY, who NEADS rarely worked with, were not as familiar with NEADS. Fox stated that this did not effect the coordination on 9/11 since the space of time between the initial notice of hijack and the point at which the military took over the national airspace was only a few hours.

Fox stated the following educated assumptions regarding the Langley AFB fighters: If the FAA had put the Langely AFB fighters on a 010 heading from the initial scramble, Fox approximates that they would have been at the most 10 to 20 miles south of Washington headed north at the time in which they were actually turned toward BWI. In this case they definitely could have gotten to Washington, and there may have been time to acquire the target and perhaps intercept. Fox was receiving the guidance to vector them directly to Washington, and if he had greater situational awareness and information the fighters probably would have been pushed at a greater pace. Even though Washington is an extremely congested arrival/departure area, the fighters could have gone afterburner until short of that area, and then slowed a bit to intercept. It has been reported officially that the impact at the Pentagon is roughly 9:37 AM. If the FAA had been aware of the location of AA 77 at sometime between 9:09 AM and 9:24 AM then the Langley fighters might have been in position in the area to intercept AA 77, according to Fox. But he notes that if they knew in that time frame and were able to give a position Langley could have launched earlier. Fox speculates that if they had five or more minutes and had gotten the position in timely manner they would have had time to intercept; but that the orders to shoot down the aircraft would still have taken time.

There is a point in the audio file at 1:20:00 that the MCC expressed frustration with Giant Killer. Fox explained to Commission staff that at Giant Killer there are FAA controllers. The reason they are certified to work with the FAA is because they follow FAA procedures, and are FAA controlled. Giant Killer is a Navy operation, and is tasked by the FAA. The scope operators are military personnel but are FAA controllers.

Fox, speaking for the lower operations level not the official level, noted that there was not too much discussion about the difficulties between the military and the FAA on 9/11. He noted that it was commonplace that the FAA would have acted the way it did. With the severity of what had happened and the increased tempo of operations there was not, according to Fox, any real time devoted to discussing the FAA's actions on 9/11 regarding the Langely fighters' coordination.

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According to Fox, when SCATANA and NESCAT operated, the airspace coordination worked well for the military. But Fox does not want to see military control over civilian aircraft. Initially post-9/11 there was little resistance by the FAA against having military fighters operate in and out of the caps. But now there is more and more resistance on the FAA side to allowing fighters to perform their operations as best they can.

According to Fox, communication is good but could still be better between the FAA and the military. Fox notes that one of the first things done for new recruits for military positions is to send that personnel to an FAA center to review those operations and be familiar so communications are easier. Fox noted that there was relatively positive coordination with the FAA in three or four missions prior to 9/11. This positive coordination was increased by the fact that the FAA is now helping with 8 or 9 flights a day. Fox noted that post 9/11 coordination with the FAA is faster and more accurate, especially through the DEN line.

General notations from Fox on operations on 9/11:

At one point on 9/11 NEADS had a Weapons Control team up for almost every flight. The sector has identified the first team "that sat down", but Fox can not confirm based off his memory. He does not know if there exists a direct record of who was at which position during the course of September 11th. On multiple occasions over the last two years the DOC (the office that supervises the Operations Floor) has asked for this information, but Fox does not know where this information might be.

Usually the Weapons SD Tech and the Weapons SD position are both "plugged in" to the communications board at the Weapons desk. But on 9/11 Fox, the Weapons SD Tech, "very quickly" unplugged and coordinated with the multiple Weapons teams that were being set up on the floor. This affects the amount of times he appears in the recordings. According to Fox, as the day got more organized, at approximately around 11 or 12 o'clock, a Canadian Captain Bilicio came in as another SD and Fox may have plugged in.

On 9/11, the capability for the radars on the coast is to give information at most 150 miles, and the radar will not see below 10,000 feet. There was radar coverage for the Langley fighters on their way to Washington. There was no good low level picture. There was enough coverage so they could bring the fighters to Washington, but the extent of the coverage and thus the ability for the fighters to communicate was less.

Fox noted that the Chicago area had an extremely limited amount of radar coverage, and only at 30,000 alt. NEADS would not have been able to speak with them.

Recommendations:

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Fox noted that it should be a joint responsibility between the military and the FAA to coordinate and direct a scramble, instead of it being controlled by the FAA over national airspace unless an ATHIO order is given. Fox explained that if there is a real world air defense scramble order, he would like the FAA to give the fighters the highest priority. Fox commented that on 9/11 the FAA should have been fully aware that it was a real world scramble out of Langley, and should have prioritized NEADS route request.

Fox also noted to Commission staff that at NEADS the radar capability has increased "ten-fold at least". He would like to see better radar picture coordination, and would like to see those pictures linked operationally. He explained this by noting that NEADS generates its picture with the new radar they have. There are deployed representatives in Washington who see the same picture as the radar operators at NEADS. He would like to see total coordination with these technologies.

Fox believes a generated air picture, tracks, and radar data being coordinated and simultaneous would be a large step towards greater situational awareness. The military is gathering the same data from the same radar, but the FAA generates its own set of data. The military computers take that data and generate their own necessary data.

Hotlines to sectors are not present to Chicago, Indianapolis or Kansas City. There are multiple sectors at which there is not even one voice page hotline. The DEN line is a good step, but on the operational side the communication could be better.

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