

F-35 Noise Measurements

Data taken 22-23 Apr 2009

Eglin AFB – Approach end of Runway 12

Data by

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The Air Force has asserted in the News Media that the F-35 is no noisier than present fighter aircraft based on:

- Newly released Edwards AFB Noise Test Data (Apr 2009)
- Overstated noise contour lines in the Final EIS because the F-35 aircraft noise estimates were believed too high
- Community Dignitary “Calibrated Ear” impressions during the recent F-35 Eglin visit

QUESTION: Is this assertion valid?

Instrumentation Hardware & Methodology

- Sennheiser ME 64 professional condenser microphones (x2)
- E-MU 0404 Wideband, Low-Noise, Ultra-Linear Digitizer
- Dell 6000 Laptop Computer w/Audacity software
- Phonics PAA-2 Audio Analyzer/SPL Meter (Calibrated)
 - “A” Weighting & 125 millisecond response time
- Recording Engineer: Bob Webb
- Recording equipment was set up in van at approach end of Eglin Runway 12, on SR85A southbound shoulder, approx 200 ft south of runway tree line.
 - **Record Mode was initiated & equipment was left to record continuously**
 - **Aircraft noise levels were measured separately with calibrated SPL meter**

Aircraft Noise Levels Recorded & Measured During F-35 Visit to Eglin AFB (on Landing Approach)

Wed, 22 Apr 2009

- Flight of three 33rd TFW F-15's landed just prior to F-35
- F-35 made an initial Gear-Up low level pass on runway
- F-35 landed
- F-16 safety chase landed

Thursday, 23 Apr 2009

- Two 46th TW F-16's each did 2 Touch & Go's & 1 Landing
 - (6 measurements)
- F-35 did Touch & Go landing
- F-35 landed

Noise Measurements

Wed, 22 Apr 2009

F-15 Landing 90.5 dB*

F-15 Landing 90.5 dB*

F-15 Landing 91.3 dB*

F-35 Low Pass 103.9 dB

F-35 Landing 105.1 dB

TDY F-16 Land 97.0 dB

*Derived from recorded data

Thu, 23 Apr 2009

F-16 Touch & Go 91.1 dB

F-16 Touch & Go 86.2 dB

F-16 Touch & Go 91.4 dB

F-16 Touch & Go 88.2 dB

F-16 Landing 92.9 dB

F-16 Landing 89.6 dB

F-35 Touch & Go 102.1 dB

F-35 Landing 105.6 dB

Data validated by:

- 1. Multiple measurements of each aircraft type with close correlation of measured values**
- 2. Continuous digital recording with F-15, F-16 & F-35 aircraft captured for direct, side-by-side comparison**

Noise Measurements -Results-

- F-35 Landing: 105-106 dB
- Eglin F-16 Landing: 90 dB (avg)
- Eglin F-15 Landing: 91 dB (avg)
- TDY F-16 Landing: 97 dB
- On Landing Approach:
 - F-35 is 15-16 dB louder than Eglin F-16's
 - F-35 is 14-15 dB louder than Eglin F-15's
 - F-35 is 8-9 dB louder than TDY F-16 (probably has -229 engine)

● The Average Person would estimate the F-35 to be 2-3 times louder when Landing than any Eglin based aircraft

Air Force Fighter Engine Thrust Ratings

Aircraft	Engine	Thrust
F-15/F-16	F100-PW-100/220	23,770 lbs
F-15/F-16	F100-PW-229	29,000 lbs
F-22	F119-PW-100	35,000 lbs class
F-35	F135-PW-100	40,000 lb class

- Jet engines are essentially **VERY** powerful motors, without a Muffler
- **More Thrust = More Noise**
 - It is reasonable to expect that the F-35 with a 40,000 lb thrust engine would, in fact, be noisier than F-15/F-16's with 23,770 lb engines
- **33rd TFW F-15's had only the lower power -100/220 engines**
- **Almost all 46th TW F-15's & F-16's have smallest engines - 23,770 lbs thrust**

F-35 Takeoff Noise

F-35 takeoff noise levels were not measured but:

- Final EIS (p 7-13, Table 7-8) states that the F-35, at MIL power &

1000 ft AGL, has a Sound Exposure Level of 121 dB”A”

- AF has asserted that the Final EIS overstated F-35 noise & it is not as loud as originally projected
- Recently released JSF SPO & Lockheed Martin chart from Edwards AFB Acoustics Test, dated April 2009, shows F-35 Sound Exposure Level, at MIL power & 1000 ft AGL, to be exactly 121 dB”A”

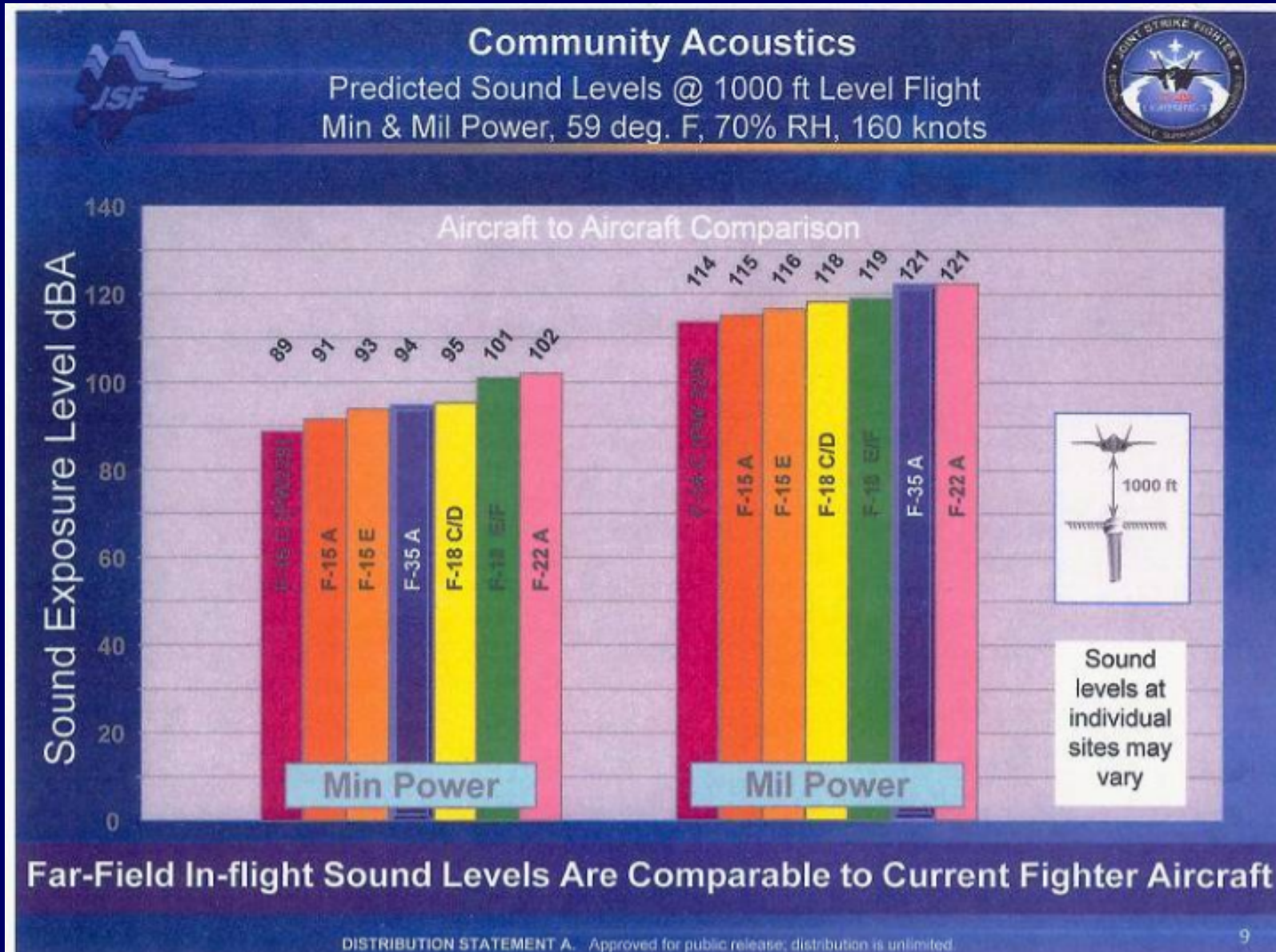
- ***RESULT 1 – Latest AF Edwards AFB F-35 Noise Test Data VALIDATES Final EIS estimates***

- ***RESULT 2 – Final EIS (p 7-13) states F-35 is approx 9 dB louder than F-15 on Takeoff & would be perceived to be***

TWICE as LOUD

AF Edwards F-35 Noise Test Data

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F-35 Noise Comparisons to other Fighter Aircraft

- In making its case that the F-35 will not be noisier, the AF has used comparison aircraft that are either:
 - Not stationed at Eglin
 - F-22 and F/A-18E/F aircraft
 - OR
 - Have higher thrust engines than Eglin aircraft
 - F-15 or F-16 with F100-PW-229 engine

● ***The only “Fair” noise comparison for Eglin is***

F-35 vs. F-15/F-16’s with the F100-PW-100/220 engine

Average (DNL) vs Peak Noise Levels

- Day-Night-Average Noise Level (DNL) determines the amount of Annoyance, Aggravation, Sleep Interference, etc. humans will encounter
 - This is an AVERAGE noise level
- Important ear health issues are determined by:
 - Peak Noise Level and Noise Duration
- ***Irreversible hearing damage can result from repeated high noise level exposure over periods of time.***
 - *The National Institute for Occupational Safety & Health (NIOSH) has recommendations for maximum sound exposure per day*
 - *High F-35 noise levels will be problematic both on and off base*

NIOSH

Maximum Recommended Daily Noise Exposure Levels

Without Ear Protection Devices (Earplugs or Ear Muffs)

“A” Weighted

85 dB 8 hrs

100 dB 15 mins

105 dB 4 mins 43 sec

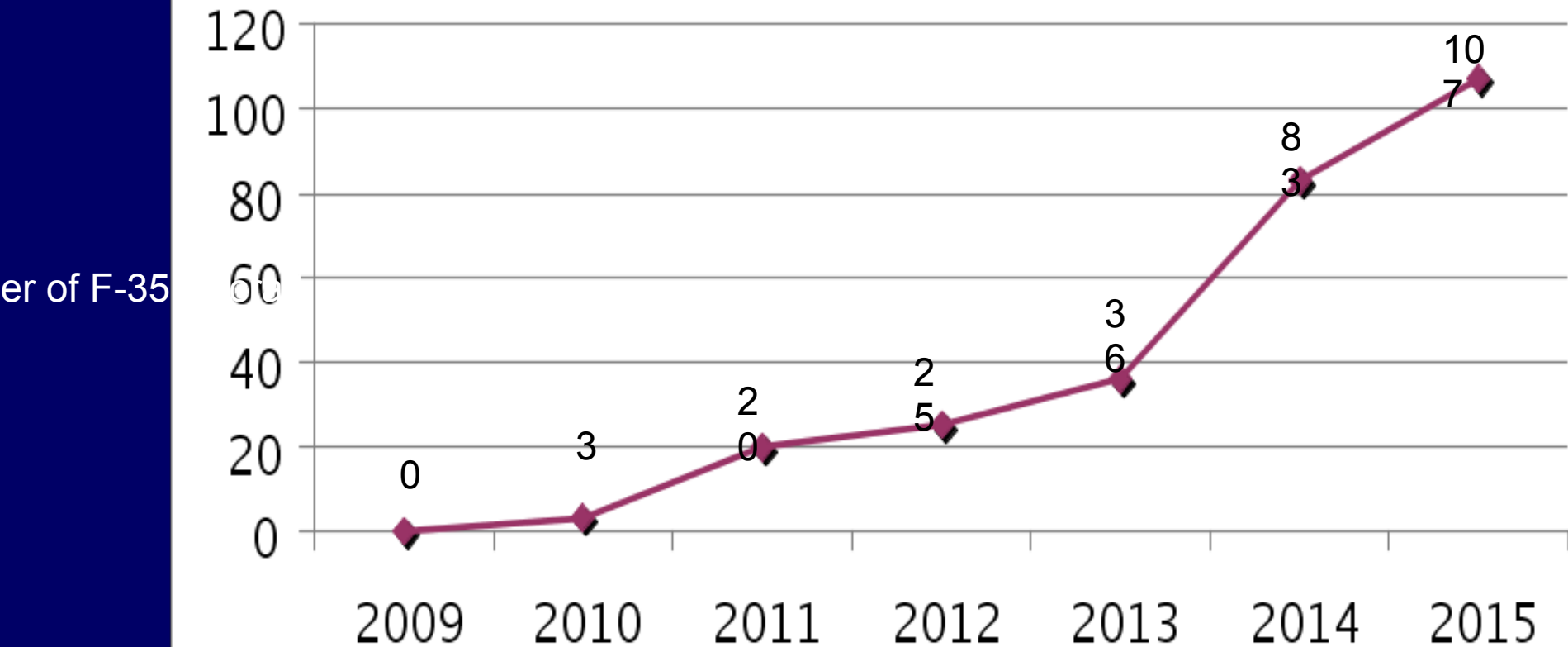
106 dB 3 mins 45 sec

115 dB 0 mins 28 sec

121 dB 0 mins 7 sec

- For **F-35 Takeoff** Level of 121 dB (@1000 ft alt) – **only 1 Takeoff/day allowed**
- For **F-35 Landing Approach** Level of 105-106 dB (@500 ft alt)
 - - 32-40 passes/day maximum allowed @ 7 sec/pass
 - - @ 14 min average intervals (AF provided number) from 7AM-10PM
 - = 60 passes/day
 - = **20-28 passes/day MORE than allowed**

F-35 Aircraft at Egl



- **Noise intensity will dramatically increase after 2013**
- **Window of opportunity 2009-2011 to effect a noise solution**

Note: Aircraft numbers are approximate, Ref: Final EIS (p 7-28, Fig 7-6)

Bottom Line:

Both recorded and measured data show the F-35 to be SUBSTANTIALLY noisier than F-15 & F-16 aircraft stationed at Eglin AFB for the last 35 years!

AND THE F-35 WILL BE AT EGLIN FOR MORE THAN 30 YEARS!!

F-35 Bed-down Location Options

- Assessment of FEIS Alternatives (Chap 7 & Annex K) by a panel of engineers (Valparaiso residents) reveals that NO FEIS Alternative solves the high noise level problems that will plague Valparaiso, Niceville, Shalimar, Destin, & Eglin Base Housing
- ***Bed-down of F-35 aircraft at some location deep in the Eglin Land Range Complex, such as Duke Field, is the only option that will reduce noise to acceptable levels in established communities surrounding Eglin Main.***
- ***The SEIS process must SERIOUSLY evaluate***

Important Note:

BRAC 2005 Town Hall Meeting
6 PM, Thursday, 21 May 2009
Niceville High School Auditorium

Col McClintock will Brief
“Summary of Information & Programs”

Followed by a Q&A Period

Please plan to attend and

BRING your Questions!