“I LEARNED ABOUT FLIGHT TESTING FROM....”
“... JUST HANGING AROUND LONG ENOUGH!”

Jim Sandberg
“I LEARNED ABOUT FLIGHT TESTING FROM....”
“Be sure you are right... then go ahead” - Davy Crockett

- YF-16 LATERAL PIO
- YF-22 LONGLITUDINAL PIO
- F/A-18E/F VMCA
YF-16 “FIRST” FLIGHT
YF-22 LAST FLIGHT
F/A-18E/F VMCA
F/A-18E/F VMCA
“Good ideas are not adopted automatically. They must be driven into practice with courageous patience.”
- Admiral Hyman Rickover, USN

• Even if they affect safety
• Even if they affect efficiency
• Even if they affect design concepts
Even if they affect safety
B-2A crash 23 Feb 2008
Even if they affect efficiency

• F/A -18E/F FLUTTER TEST PROGRAM

• EGLIN’s “LBA” WEAPONS TEST PROGRAMS
EVEN IF THEY AFFECT DESIGN CONCEPTS

YF-23 Integrated Auto Throttles
EVEN IF THEY AFFECT DESIGN CONCEPTS

YF-23 Integrated Auto Throttles (1988)  
F/A-18E/F Integrated APC (1994)
F-35B LIGHTNING II (2004)
F-35B LIGHTNING II (2011)
“Sooner or later, programs need an excuse to do the right thing...”

F-18 HIGH AOA TESTING
“Sooner or later, programs need an excuse to do the right thing...”

F-18 HIGH AOA TESTING

F/A-18E/F SPIN TESTING
Upright Spin, 120 deg/sec, Left
3 Tank Interdiction Loading
Flight 266, Run 28, 10 July 98
Pilot: CDR Niewoehner
“If you can’t get the data... THAT’s the data!”
– Bob Wirt via Jerry Gallagher

• F/A-18E/F  SPEED-POWER
  VL DIVES
  VMCA

• B-2  SPEED-POWER

• F-22  LOADS
Beware of short-cutting tried and true processes and procedures that WORK

- F/A-18E/F Iron Bird
- FADEC Regression Testing
- “Step One” Gear Check
“Step One” Gear Check

QF-86 (1986)
“Step One” Gear Check

QF-86 (1986)       YF-23 (1990)
LESSONS LEARNED

• “Be sure you’re right... then go ahead”

• “Good ideas are not adopted automatically. They must be driven into practice with courageous patience.”

• Sooner or later, programs need an excuse to do the right thing...

• “If you can’t get the data... THAT’s the data!”

• Beware of short-cutting tried and true processes and procedures that WORK
Beware of “Quick Fixes” and project forward to identify unintended consequences.

- F-18 LEX SLOTS vs VERTICAL TAIL FATIGUE
- F-18 LEX DESIGN vs TURN PERFORMANCE
- F-18 WING SNAG vs WING DROP