

**Recent (more or less)
Government
Sonic Boom Programs**

**Kenneth J. Plotkin
Wyle Laboratories
14 November 2003**

Government Programs

- X-1 – started it all in 1947
- USAF, NASA studies in 1950s
- NSBEO in 1960s – supporting the SST
- NASA programs in 1970s, 1980s
- USAF NSBIT in 1980s, 1990s
- NASA HSCT 1988-1995
- USAF PCBoom4

Summary of U.S. Sonic Boom Flight Programs

Location / Study	Govt. Participants	Calendar Year																										
		80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	
WPAFB	USAP	█																										
WPAFB - EDWARDS	USAP				█																							
WPAFB - EDWARDS	USAP					█																						
EDWARDS AFB	NASA						█																					
EOLBY AFB	USAP / USA							█																				
WALLOPS STATION	NASA								█																			
WALLOPS STATION	NASA									█																		
WPAFB	USAP										█																	
NELLIS AFB	USAP / NASA											█																
EDWARDS AFB	USAP / NASA / FAA												█															
ST. LOUIS	USAP / NASA / FAA													█														
SPEED RUN B-58	USAP														█													
WALLOPS STATION	USAP / NASA / USN / FAA															█												
EDWARDS AFB	USAP / NASA / FAA / USA																█											
OKLAHOMA CITY	USAP / NASA / FAA																	█										
WHITE SANDS	USAP / FAA																		█									
EDWARDS AFB	NASA																			█								
CHICAGO	USAP / NASA																				█							
WALLOPS STATION	USAP / NASA / USN																					█						
JTF-3 TONOPAH	USAP																						█					
EDWARDS AFB (B-70)	NASA / USAP																						█					
EDWARDS AFB (SR-71)	NASA / USAP																							█				
EDWARDS AFB (NSDEO)	FAA / USAP / NASA / NOAA																							█				
PENDLETON, OR	FAA / NOAA																								█			
NEVADA (BREN)	NASA / AEC / NASA / NOAA																									█		
APOLLO	NASA / USN																										█	
EAST COAST NOISE	NRL / FAA / USAP / NASA																											█
MOA'S	USAP																											█
SPACE SHUTTLE	NASA / USAP / USN																											█
BOOMFILE (NSBIT)	USAP / NASA																											█
WSMR (JAPE)	NASA / USAP																											█
Edwards AFB	USAP																											█
Fallon Test Center	USA/CERL/USN																											█

Classic Sonic Boom Studies (1960s)

- **National Sonic Boom Evaluation Office**
- **USAF, NASA, FAA projects**
- **Oklahoma City, St. Louis experiments**
- **100,000 plus sonic boom recordings**
- **Physiological studies**
- **Psychoacoustic studies**
- **Structural studies**
- **Animal effects**

The Gap: 1970s to mid-1980s

- **Ongoing NASA supersonic studies**
 - Boom minimization
 - Evaluation of technology
- **Space shuttle launch and entry sonic boom**
- **NEPA-driven studies for military supersonic airspace**

NASA HSR/HSCT

- Late 1980s: technology ripening, SST appeared feasible
- Technology/design effort for 300 passenger SST
- Supporting research in sonic boom effects, particularly human acceptability of booms
- Substantial research in sonic boom propagation
- Ultimately (mid-90s) concluded an 300 passenger SST was not yet attainable

Military NEPA Studies: NSBIT

- **Noise and Sonic Boom Impact Technology**
 - Began in 1984, to answer noise unknowns that arose in environmental assessments of airspaces
 - Continued through mid-1990s
- **Studies of boom effects on people, domestic animals, wildlife, structures**
- **Improved sonic boom prediction models**

Recent/Ongoing Studies

- QSP and NASA studies (but you knew that)
- “Commercial Supersonic Technology: The Way Ahead” – National Research Council, 2003
 - Large (300 passenger) SST far in future
 - Technology for SSBJ within reach
- Continued DoD effects studies, as needed
- Updates of sonic boom models, e.g. USAF sponsorship of Windows GUI “PCBoom4”