

Boeing's Formidable B-52 Stratofortress Bomber

Presentation to:



August 18, 2011

By: Larry Rinek

Aviation Historian

Agenda

- **Development Background**
- **Prototypes (X and Y)**
- **Design Innovations**
- **Production Models (A-H)**
- **Derivatives & Test Beds**
- **Combat Campaigns**
- **Summary of Conclusions**
- **Video & slide show**

Development Background

- **Conceived in 1945-1946 as a heavy straight-wing bomber with 4 Curtiss-Wright XT-35 turboprop engines (later dropped in favor of turbojets)**
- **Evolved to swept-wing bomber**
- **P&W J57 turbojets (8) selected October 1948**
- **Two prototypes (XB/YB-52) ordered in 1949**
- **Production contract: 13 B-52As, early 1951**
- **SAC's General LeMay orders new cockpit layout**
- **First flights of 2 prototypes in 1952**
- **First SAC delivery (93rd BW): June 1955 (B model)**
- **Boeing delivered 744 B-52s by October 1962**

Prototypes

- **XB-52 (flew second)**
- **YB-52 (flew first)**
- **Flight test only: no armaments**
- **Tandem cockpit (later revised)**

YB-52 First Takeoff



April 15, 1952 at Boeing Field (Seattle, Washington)

YB-52 in Flight



Very difficult to handle in 1st flight: high-effort lateral (roll) control ⁶

XB-52 on Ramp

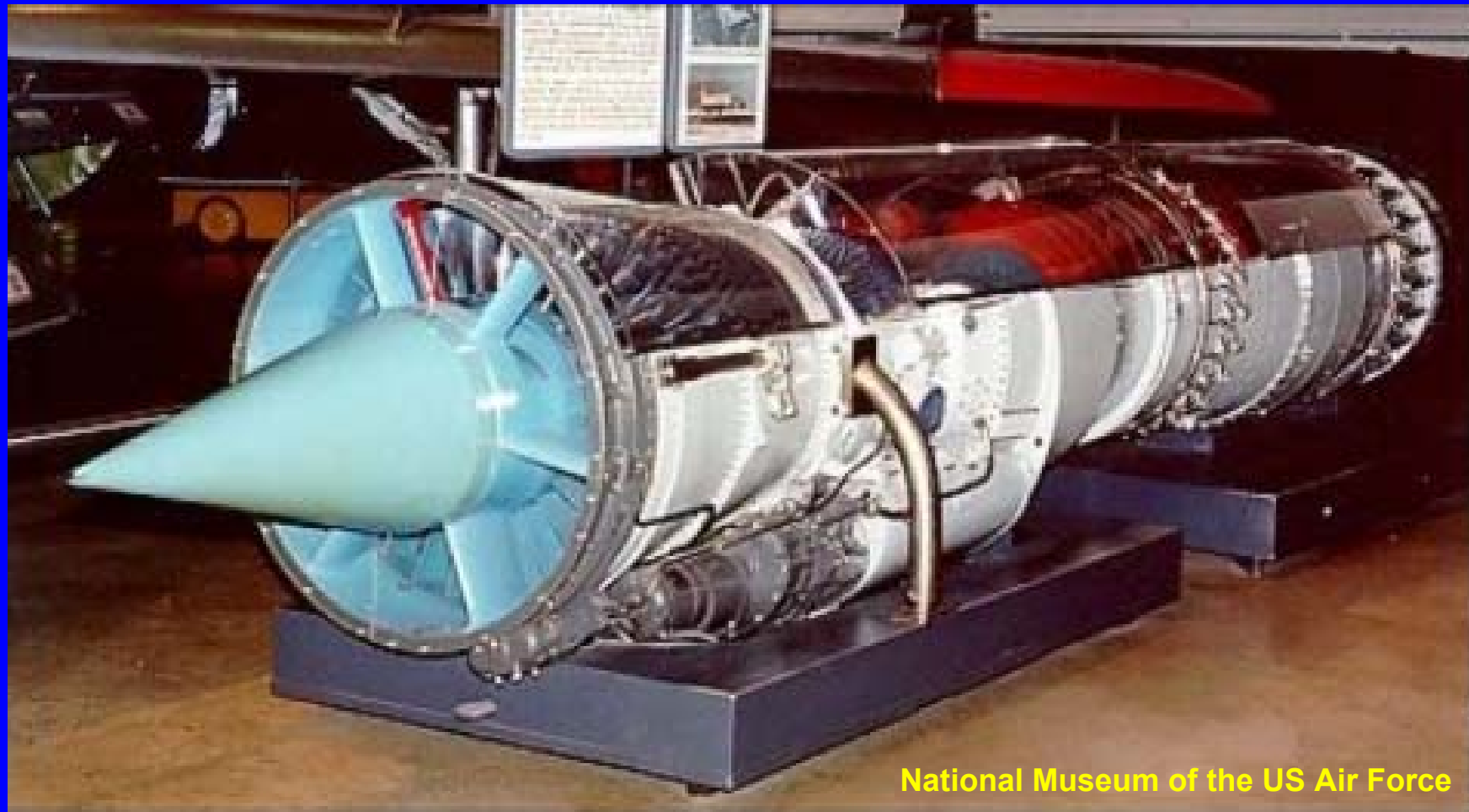


First flew in October 1952 after pneumatic explosion repairs

Design Innovations

- **Extension of B-47 aeronautical features:**
 - Swept (35 degree) thin & fairly flexible wings
 - Clean/low-drag airframe
 - Engine nacelles hung under wings
 - Automatic yaw damper for rudder
- **Novel rotating landing gear**
- **Active spoilers on wings**
- **P&W 2-shaft turbojet/turbofan engines**

Pratt & Whitney YJ57-P-3 Turbojet for XB-52



National Museum of the US Air Force

Dual-shaft design improved range/fuel economy. In the B-52 application, thrust ranged from 8.7K lb (dry in XB & YB) to 13.75K lb (wet in F & G)

Production Models

- **A: 3 early test aircraft for USAF, NASA**
- **B: 1st model for SAC (1955), more power**
- **C: similar to B, more range/fuel capacity**
- **D: big bomb loads, heavy combat in SEA**
- **E: very similar to D, avionics upgrades**
- **F: thrust up, 1st into SEA, nacelle bulges**
- **G: cut tail fin, ALCMs, ECM upgrades, wet wing, combat use in SEA, EVS retrofit**
- **H: TF-33 turbofan engines, EVS retrofit, tail gun removed, alternator & other upgrades**

First B-52A Under Construction



In famous Boeing Plant #2 (building demolished November 2010) ¹¹

B-52A (001) In Flight



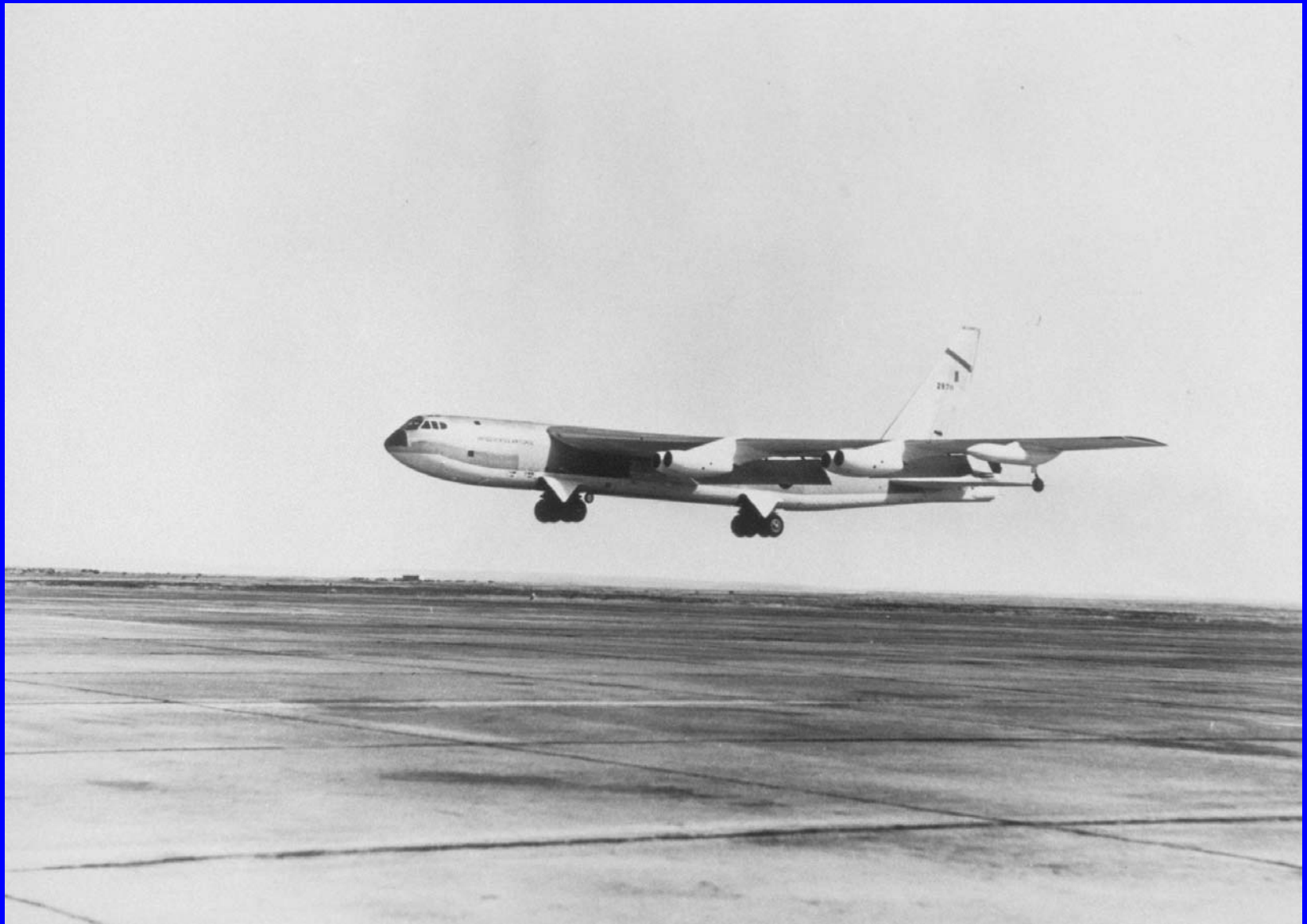
First flown in August 1954, the A models were not for combat

B-52B In Flight



Combat ready, 50 Bs built (including 27 RBs), water inj. added

First B-52B Delivery



29 June 1955, Castle AFB (Atwater, California)

B-52B Demonstrates Pivoting Landing Gear



Enhances crosswind landing safety

B-52B Landing Gear Close-up



Cleveland Pneumatic Tool was Boeing's landing gear vendor

B-52B Crew Lined Up for Inspection



Pilot, copilot, radar navigator (bombardier), navigator, EWO, tail gunner

B-52B on Ramp



Has reflective white paint to resist nuclear detonation effects

KC-97 Ready to Refuel B-52B



Piston tanker so slow, B-52 lowered gear and both went into dive ¹⁹

B-52C in Flight



50 Cs built, all convertible to RBs, got bigger drop tanks

B-52D at Castle Air Museum



Got “Big Belly” mod to carry more bombs over Southeast Asia

B-52D Tail Guns



4 M3 50 caliber machine guns, got 2 MiG kills over North Vietnam ²²

Hound Dog Nuclear Cruise Missile on B-52D



In service 1960-1978, AGM 28 used P&W J52 (7,500 lb thrust)

B-52D Cockpit Interior



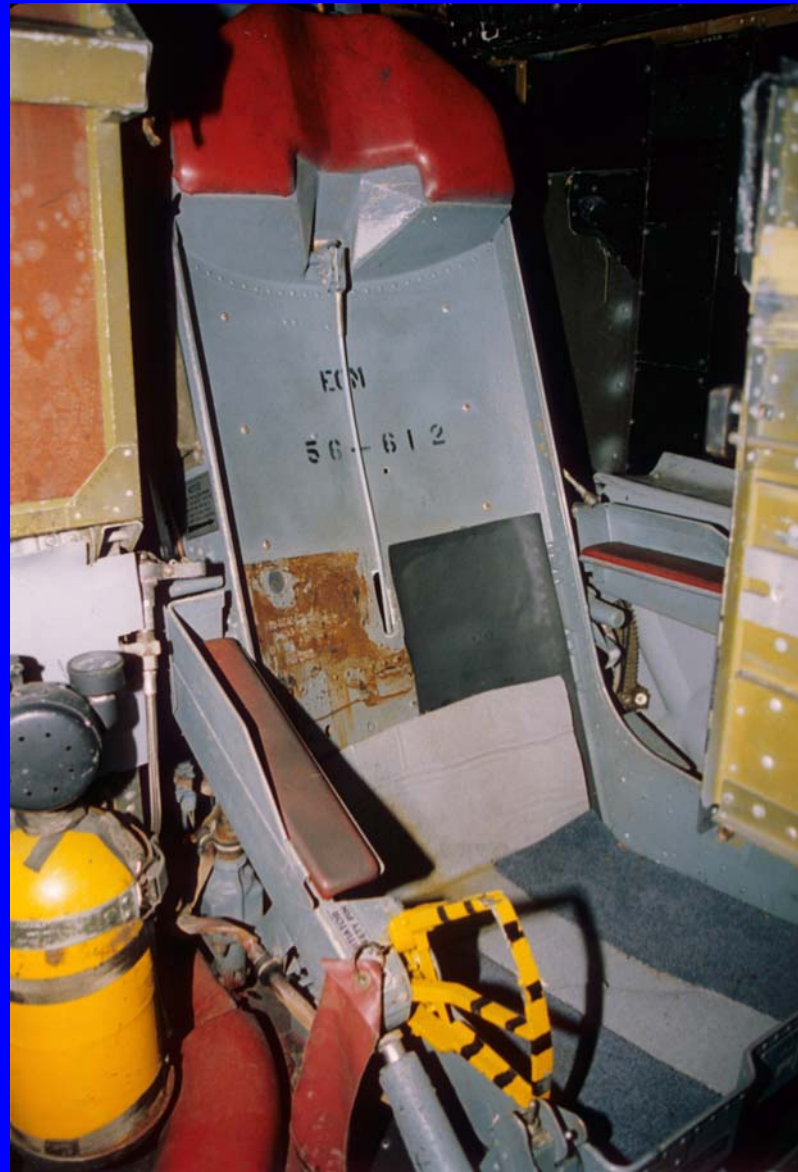
Conventional instruments, upgraded in later B-52 models

B-52D Downstairs Crew Station



Radar Navigator station on left, Navigator station on right

B-52D EWO Ejection Seat



Key role of EWO: work the jammers (electronic countermeasures) ²⁶

B-52D Refueling by KC-135A



Two Boeing icons at work: tanker boom flows 1,100 gpm of JP4

B-52E on the Ramp



Avionics upgrade from D model, 100 built, retired early

B-52F in Flight



Pilot favorite, bulging nacelles for alternators, served in SEA (1965)²⁹