



# Columbia Accident Investigation Board

## *Organizational Causes of the STS-107 Mishap*

- **ORGANIZATIONAL CAUSES:** The organizational causes of this accident are rooted in the Space Shuttle Program's history and culture, including the original compromises that were required to gain approval for the shuttle program, subsequent years of resource constraints, fluctuating priorities, schedule pressures, mischaracterization of the Shuttle as operational rather than developmental, and lack of an agreed national vision for human spaceflight. Cultural traits and organizational practices detrimental to safety were allowed to develop, including: reliance on past success as a substitute for sound engineering practices (such as testing to understand why systems were not performing in accordance with requirements); organizational barriers that prevented effective communication of critical safety information and stifled professional differences of opinion; lack of integrated management across program elements; and the evolution of an informal chain of command and decision making processes that operated outside the organization's rules.



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**“The foam did it” ...**

***The institution allowed it.***



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## History—From Challenger to Columbia

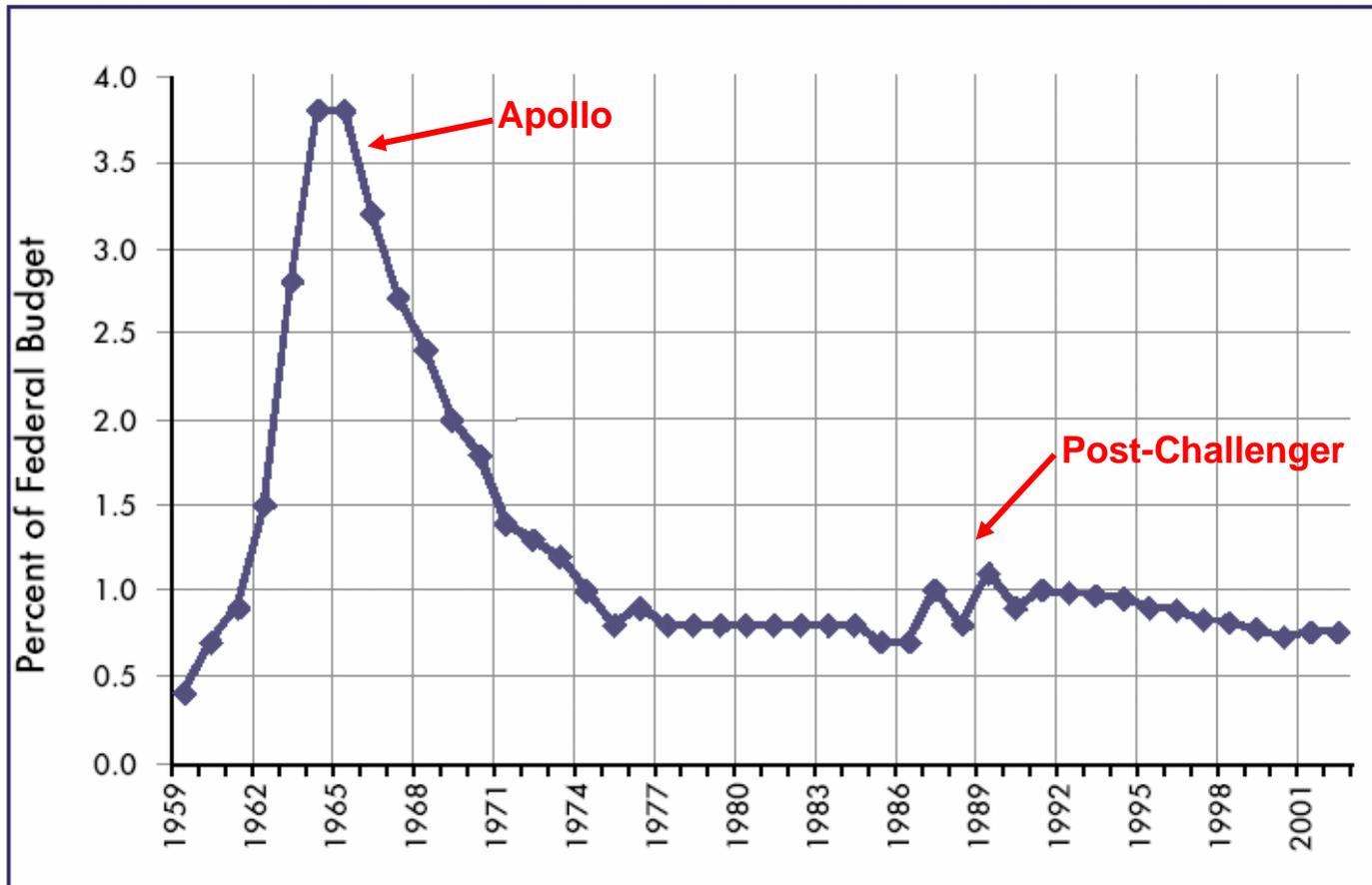
- The Shuttle Program flew **87 successful missions between *Challenger and Columbia***
- However, the Shuttle Program had been **operating too close to too many margins**
  - Shuttle budget and workforce reduced by 40%
  - **3,233 waivers on *Columbia* ... 36% not reviewed in 10 years**
  - Little margin for addressing unexpected technical problems or to make upgrades
- **Shuttle mischaracterized** in 1995 as “*a mature and reliable system*”
  - NASA thus believed it could continue to outsource more functions
  - By treating the Shuttle as operational, NASA reduced engineering functions normally associated with a flight development vehicle



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## *History: From Challenger to Columbia*

- Since the early 1970s, NASA has received 20% or less of the funding available to it during the Apollo Program

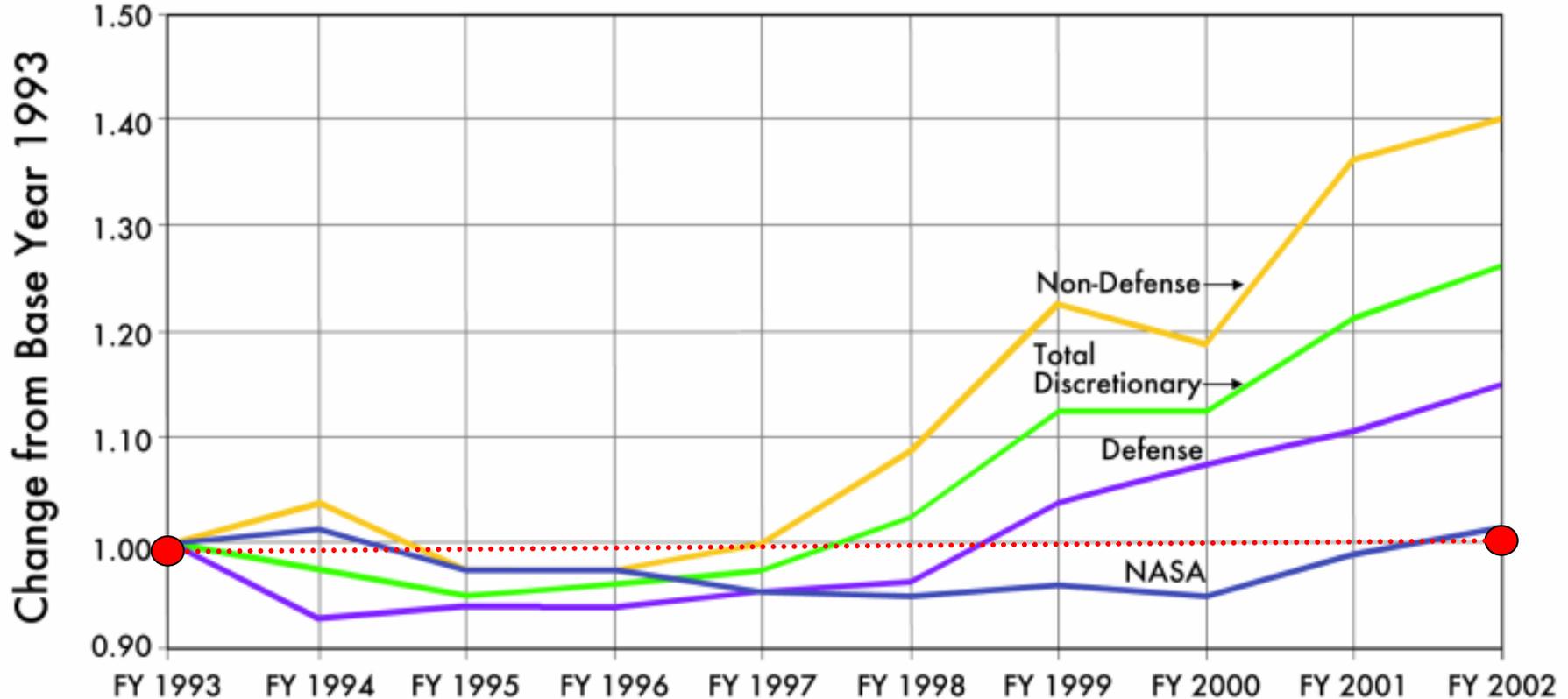




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## *History: From Challenger to Columbia*

- During the 1990s, while other areas of federal spending grew, NASA lost 13% in purchasing power--even though building the ISS





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## History: From Challenger to Columbia

- NASA continued to pursue an ambitious agenda on a level budget; adopted a **“Faster, Better, Cheaper”** approach, various managerial changes, and budget and workforce cuts
- As the largest single NASA program, the Space Shuttle bore more than its share of these cuts

