



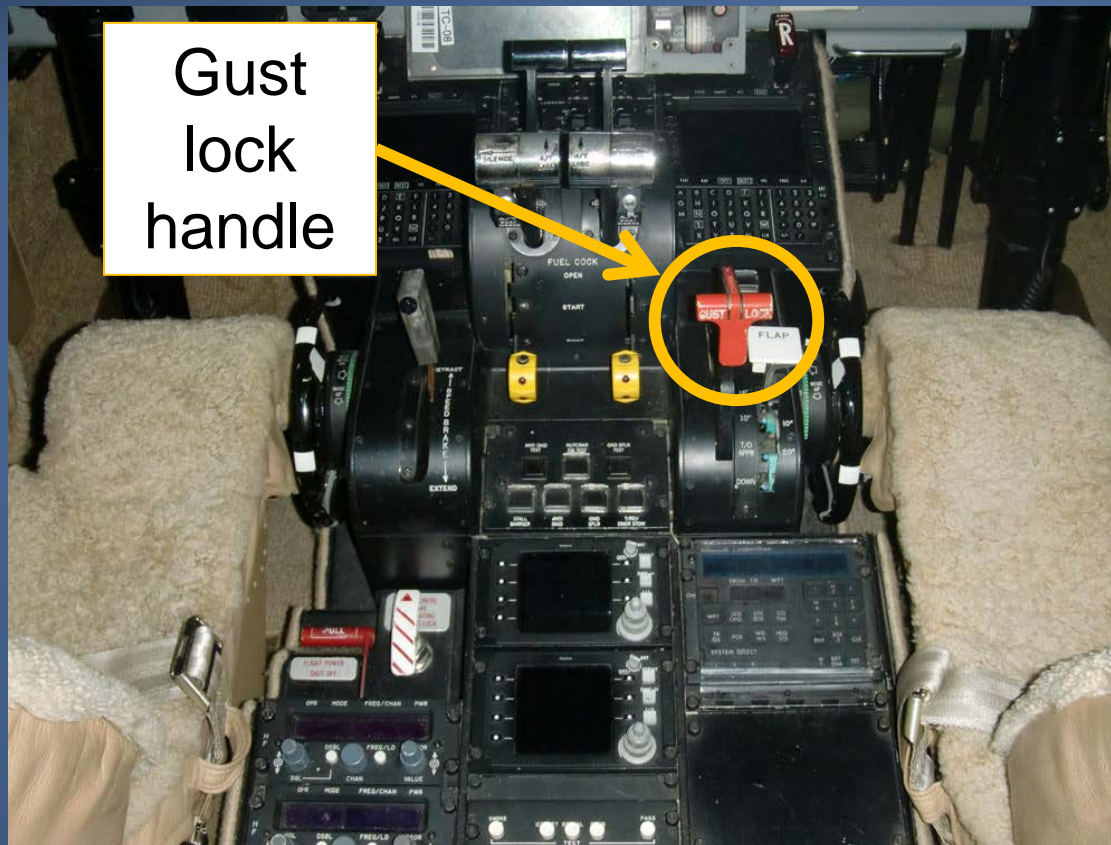
# National Transportation Safety Board

## Gust Lock Design and Certification

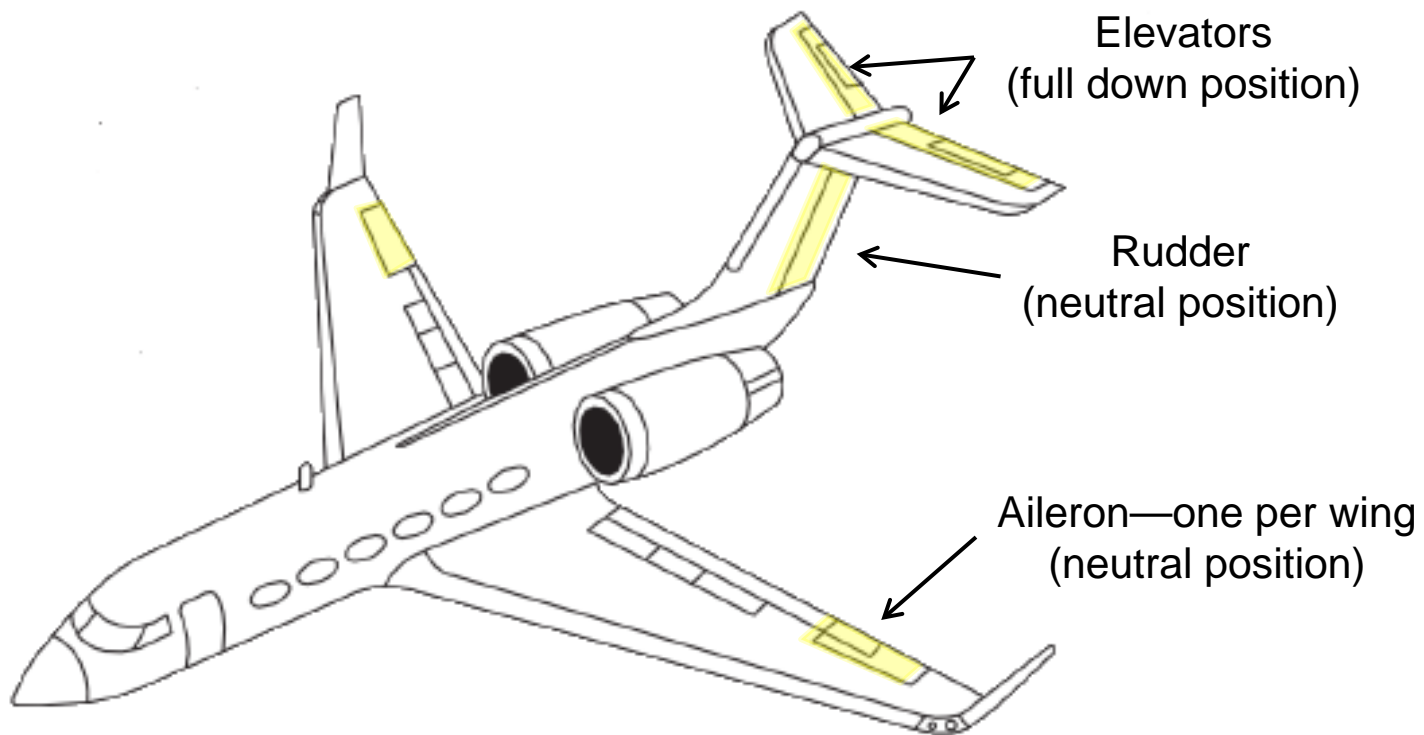
### Airworthiness presentation



# G-IV Gust Lock System



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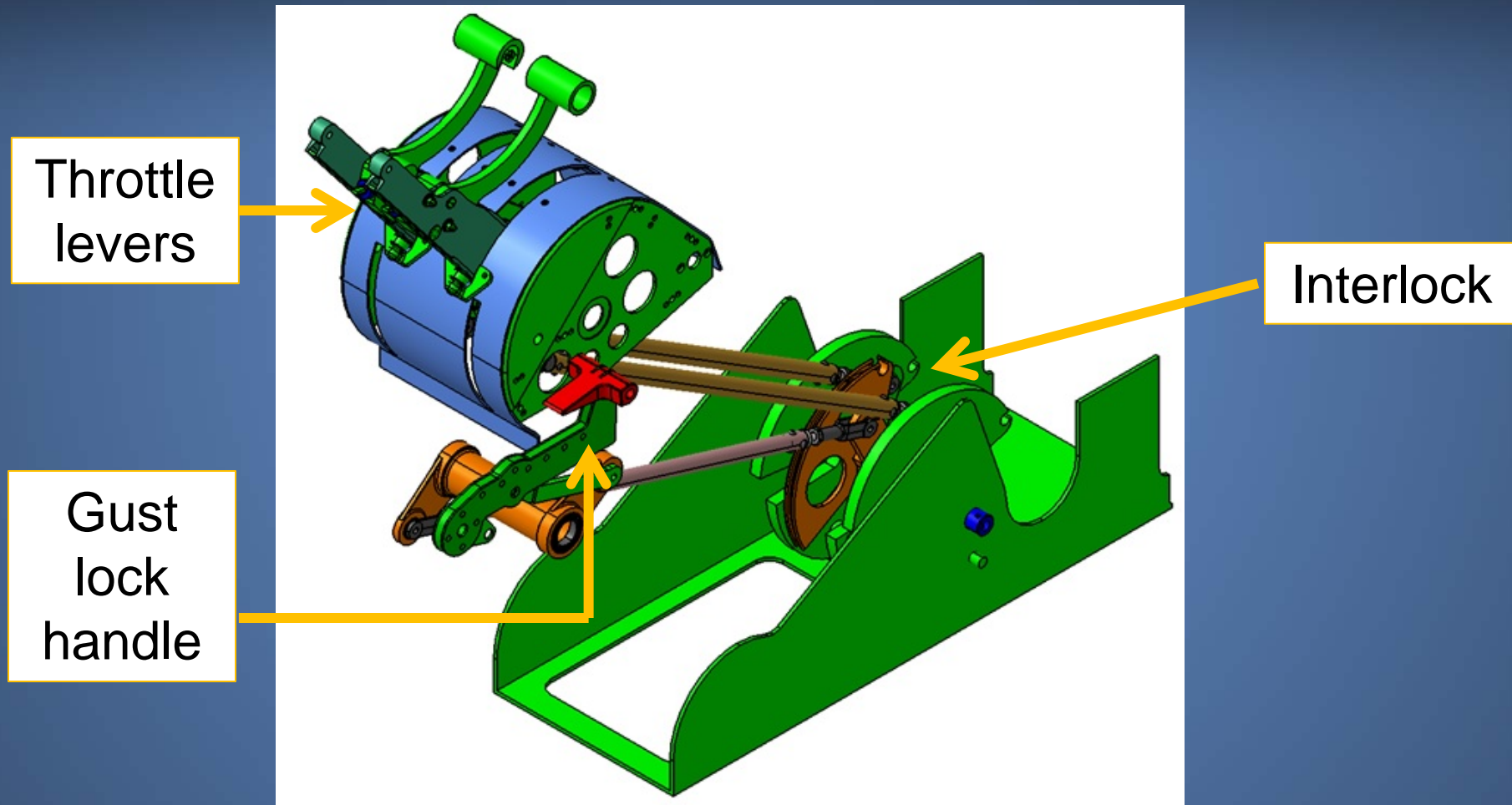


# Gust Lock Certification Requirements

- 14 *CFR* 25.679: Gust lock system must limit operation of airplane so that pilot receives “unmistakable warning” at start of takeoff if gust lock system engaged
- FAA considers unmistakable warning to be a warning that physically limits operation of airplane to prevent unsafe takeoff
- Gulfstream intended to comply by limiting throttle lever angle (TLA) to 6° with gust lock engaged



# Gust Lock/Throttle Lever Interlock



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- Accident airplane achieved 22° TLA with exemplar gust lock handle installed
- Analysis found that design could allow for TLA up to 23°
- Inspection of nine in-service G-IVs found achievable TLA 3 to 4 times design intent
- Achievable TLA does not limit operation to provide unmistakable warning

# Actions Taken by Gulfstream

- Released two maintenance and operations letters to G-IV operators
  - Check flight controls for freedom of movement before taxi/takeoff
  - Throttle lever movement is not absolute indicator of gust lock status
- Currently developing modification to interlock to meet gust lock certification requirements

# Certification Drawing Review

- Compliance with gust lock requirement demonstrated by G-IV engineering drawing review
- Drawing review alone did not ensure compliance
- Verification testing would have identified problem





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