I am learning about flight testing... from an accident 23 years ago

Dr Fredrik Carlsson
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Flight Test Safety Workshop, Seattle
OUTLINE

Short history of SAAB fighters
Gripen fighter development
Authorization for flight test engineers at SAAB
Gripen NG Test Aircraft program
Authorization in the real world
LOCATION

[Map showing locations of Linköping and Vidsel]
HISTORIC AIRCRAFT

Saab 17

Saab 21
JET FIGHTERS

Saab 35 Draken

Saab 37 Viggen
SAAB 39 GRIPEN

- 4:th generation fighter
- Relaxed stability
- Multi-role
- NATO compatible
- AAR
23 YEARS AGO...
TEST ENGINEER

- Flight test instrumentation
- Evaluation tools
- Avionics
- Simulator tests
- Flight mechanics

- Perform rig-, simulator tests and lead low risk flight tests
FIRST TEST ENGINEER

- MBSE
- Requirements, Verification and Validation
- Project leadership
- Aerodynamics and flight dynamics
- Personal development
- Job rotation within SAAB
- International course

- Responsible for test tasks and lead flight testing
SENIOR TEST ENGINEER

- Intercultural communication
- Business decisions
- Negotiation techniques
- Personal development part 2
- Presentation at an international conference
- Job rotation:
  - Flight test department outside of Sweden
  - Non-flight test department at Saab

- Act as authority within discipline and can handle other disciplines
GRIPEN NG TEST AIRCRAFT

- More payload
- Extended range
- AESA radar
- New avionics
- New engine
RISKS TAKEN

- Envelope expansion
- Marketing
- Customer evaluations
- Efficiency
AUTHORIZATION IN REAL LIFE

- Envelope expansion
- Marketing
- Customer evaluations
- Efficiency
- No Vote
- Complacency
RESULTS FROM AUTHORIZATION

- Good a/c knowledge
- Good avionics knowledge
- Good aerodynamic and flight dynamic knowledge
- Good cross discipline contacts
- Good self awareness
- Part of a low employee turnover
WHERE DO WE GO FROM HERE?

- Include flight test safety in authorization programs
- Organization culture
- Workshops on communication
- Hosting the European FTSW in November