



SAAB | **75** YEARS OF
DEFENCE AND
SECURITY

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



Dr Fredrik Carlsson
May 03 2012
Flight Test Safety Workshop, Seattle



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OUTLINE

Short history of SAAB fighters

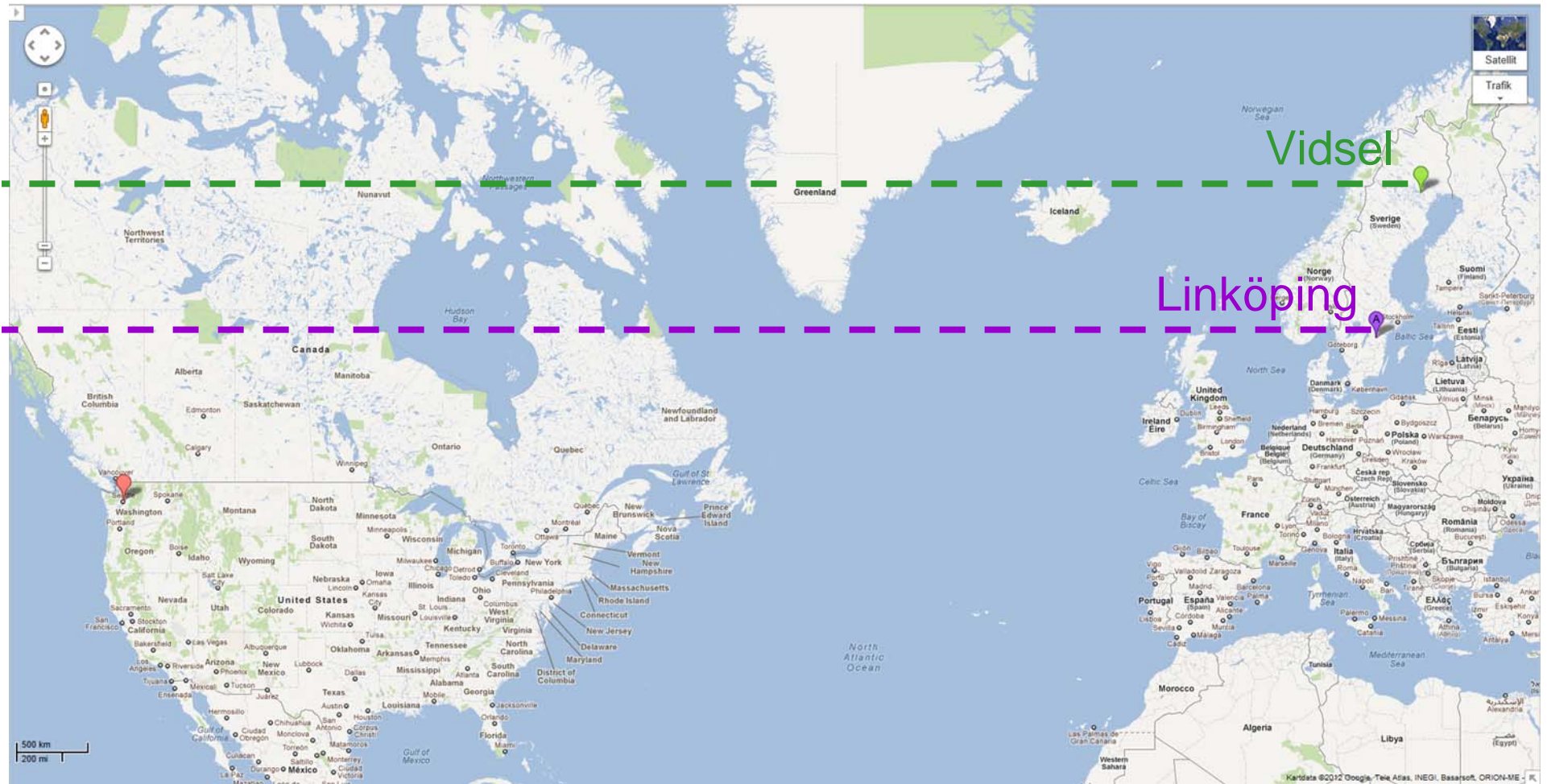
Gripen fighter development

Authorization for flight test engineers at SAAB

Gripen NG Test Aircraft program

Authorization in the real world

LOCATION



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HISTORIC AIRCRAFT



Saab 21

Saab 17



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JET FIGHTERS



Saab 37 Viggen

Saab 35 Draken



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SAAB 39 GRIPEN

- ▶ 4:th generation fighter
- ▶ Relaxed stability
- ▶ Multi-role
- ▶ NATO compatible
- ▶ AAR



23 YEARS AGO...



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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






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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





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