Norwegian Flight Trials (high latitude performance

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Objective

• To determine the availability of SBAS at high latitudes within the EGNOS service volume.

EGNOS Satellite Constellation

Trial Description (1)



Trial Description (2) Aircraft Installation





ITT User platform

SBAS receiver

BAC1-11 Flying Laboratory

Trial Description (3) Terrain & Aircraft shielding

Low elevation satellite



Trial Description (5)

Airfields

- Bardufoss
 - Challenging mountainous terrain
 - AOR-E elevation 8.2°
 - Runway bearing 100°
 - Aircraft perpendicular to the bearing of the aircraft and AOR-E
 - Greater risk of terrain shielding²
 - Approach made down to 50'

Trial Description (6)

Airfields

- Tromso
 - Challenging mountainous terrain
 - AOR-E elevation 8.8°
 - Runway bearing 190°
 - 25° from the bearing of the aircraft and AOR-E
 - Greater risk of airframe shielding
 - Approach made down to 50'

Results (1)

- Three AOR-E SIS outages observed
- A roll angle of >50° directly away from th GEO was required to give a significant outage
- No outages during approach or departure phases

Results (2)

No Terrain shielding effects observed
99.68% SBAS SIS availability
Probable that the SIS availability would be higher with the full three GEO constellation of EGNOS

Conclusions

- Terrain masking is not likely to be a significant problem
- No loss in SIS would be expected during precision approach operations
- Airframe shielding must be considered in SBAS procedure design.

This issue will be significantly reduced with the full EGNOS GEO constellation