

CASE STUDY

NAVIAIR

CONTINENTAL DENMARK: SPACE-BASED ADS-B AS A CONTINGENCY SURVEILLANCE LAYER

Naviair is a commercial, independent company owned by the Danish state and responsible for Air Traffic Management (ATM) in the Danish airspace. Naviair also provides en route flight information services in the Greenland airspace, aerodrome control and approach control services for Copenhagen Airport, as well as five other Danish airports and aerodrome flight information services for Vágar Airport.

CURRENT AIR TRAFFIC SURVEILLANCE LIMITATIONS

Naviair's ATM system is in compliance with applicable safety regulation and operational methods. However, a space-based Automatic Dependent Surveillance-Broadcast (ADS-B) service will increase the redundancy of Naviair's system and, in the rare situation where a malfunction may occur, provide a backup system to prevent operations from being heavily impacted.

Simulations carried out by EUROCONTROL indicated that just one air traffic surveillance malfunction lasting two hours during peak traffic can generate up to 19,500 minutes of delay. The cost of delay for airlines can amount to more than 1.5 million (USD).

In 2014, Naviair experienced a loss of air traffic surveillance data in Copenhagen Area Control Center (ACC) and some outlying airports for two hours and 40 minutes. The situation was a combination of a scheduled outage of the primary network and simultaneous malfunctions of the secondary network. This event had a limited impact on operations and created minimal delays due to the timing of the outage. However, based on EUROCONTROL simulations, a similar situation during peak hours would have generated up to 26,000 minutes of delay and a potential loss of 2 million dollars (USD) for the airlines.

Additionally, in the western part of the Copenhagen region, air traffic surveillance is delivered by two radars covering the area. Due to the limited surveillance layers and ground infrastructure, reduced aircraft separation is applied if one of these radars are unusable.

FUTURE PLANS FOR SPACE-BASED ADS-B

Aireon's space-based ADS-B service will be completely independent from Naviair's current air traffic surveillance infrastructure. It will add a layer of redundancy to Naviair's surveillance capability that does not exist today. Space-based ADS-B will be utilized in contingency situations where either critical resources in the current system are completely or partially missing or when the data from current sources is missing or malfunctioning.

Additionally, space-based ADS-B provides Naviair with air traffic surveillance data in the most western part of the Danish flight information region in the North Sea. With enhanced visibility into air traffic, Naviair is able to reduce separation between aircraft in this region.

THE BENEFITS

By having a contingency layer of surveillance provided by Aireon's space-based ADS-B, Naviair is able to maintain the highest safety standards and continue service delivery during outages, malfunctions and other service-related issues. This prevents airlines from losses due to delays during these situations and allows customers to continue with their air travel, as previously planned, mitigating delays and reducing flight times.