

SAMPLE EDUCATIONAL ARTICLE ON AIRSPACE EFFICIENCY EFFORTS

This educational article was developed for Southwest Airlines. They requested the target audience be their pilots and other employees to increase awareness of the efficiency efforts occurring during space launches.

The FAA ATO Space Collaborative Decision making program is happy to provide a similar article for your organization if of interest.

Please send request to SPOC@FAA.GOV. Please note the audience in your request as well as a POC.

Making Space: FAA Airspace Efficiency During Space Launches

“Optimization factors are vital to ensure the safe, efficient, and equitable use of the National Airspace System (NAS).”

- Duane Freer, FAA Space Operations Manager



March 29-30, 2023 The NOC hosted the FAA Space Operations Committee (ATO SpOC) including space companies, airline associations and FAA officials collaborating on space operations and airspace efficiency.

In 2022, a record 92 U.S.-based space launches and reentries were integrated into the National Airspace System (NAS), up from just 34 before the pandemic. The number is expected to more than double in the next few years and the Federal Aviation Administration (FAA) is leading the way to efficiently manage the increasingly crowded skies.

FAA ATO Space Ops focuses on airspace integration

In order to optimize the safety and efficiency for both aviation and space sectors, in 2021 the FAA formed a dedicated office within the Air Traffic Organization to manage space operations. [Space Ops](#) monitors launch

or reentries from the Challenger Room at the FAA [Air Traffic Control System Command Center](#) in Warrenton, Virginia. The team hosts a hotline with all key stakeholders, tracks in near real-time the space vehicle while in flight, and coordinates an airspace response, if there is an anomaly. The operational goals are to keep airspace open longer, reduce how much is closed and for how long, and then re-open it as quickly as safety allows.

Mission planning and optimization

The Space Ops team works closely with airlines, space operators, air traffic facilities and other stakeholders to develop the most efficient and safe airspace management plan for each mission. Sometimes this planning can take months.

The FAA uses a [set of objective factors](#) to better optimize and balance the needs of launch operators, airlines, general aviation and the military to determine whether a commercial space operation may proceed as requested. Factors include location, time of day, length of launch window, number of flights or passengers impacted, holiday travel periods and mission purpose.

New procedures and technology to operate more efficiently

While a space operation is in progress, the FAA uses technology and procedural measures to manage when to close and reopen the airspace. As a result, airspace closure time on average has fallen from four hours to two hours.



FAA Challenger Room for ATO Space Operations at Air Traffic Control System Command Center, Warrenton VA



November 26, 2022: The SpaceX/NASA CRS-26 launch from Cape Canaveral Space Force Station/Kennedy Space Center marked the 500th licensed launch for the FAA.

Critical Decision Window: If a space launch or reentry may be scrubbed and rescheduled, the FAA encourages the space operator to make the decision early and before any air traffic management initiative is implemented.

Dynamic Launch and Reentry Windows: The FAA uses key mission “triggers” such as the loading of rocket fuel and the final disposition of the booster rocket to pinpoint when to close and reopen airspace. This procedure has saved nearly 15,000 minutes in the last three years.

Space Data Integrator (SDI): This [tool](#) allows the FAA to track a space vehicle in near real-time by receiving telemetry data such as position, altitude, speed and any deviation from its expected flight path. It provides the FAA situational awareness, and in combination with other information, helps to reopen airspace quicker.

Time-Based Launch Procedures: The FAA identifies and reroutes only the aircraft directly affected by the closed airspace allowing more aircraft to stay on their most optimal and efficient routes. It also alleviates en route sector volume and minimizes the number and length of traffic management initiatives. These efforts in the past few years have overall raised the NAS efficiency rating.

Space Ops also works with the U.S. Space Force and spaceports to conduct Hazard Area Analysis for launch operations and identify efficiencies. A recent success was an agreement to open AR6-15 by reducing the footprint of the ‘clamshell’ hazard area off of Cape Canaveral for some launches. This was done without compromising safety.

The future of airspace efficiency

This past March, the Southwest NOC hosted the FAA Space Collaborative Decision Making program. This program includes airlines associations, space companies, and FAA officials and is key to managing for innovation and future optimization efforts. The coalition is looking at data sharing, international practices and tools for information exchange.

New Clamshell Options: opening up of AR6-15

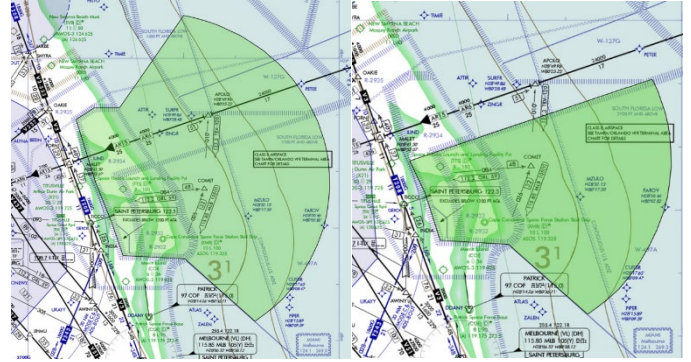


Figure 1: full clamshell

Figure 2: partial clamshell



March 2023, the FAA ATO Space Operations Committee hosted by Southwest Operational Leaders at Headquarters while collaborating on Airspace Efficiency efforts.

Additional efforts include enhancements to the Space Data Integrator (SDI) and additional automation tools included in the NAS Space Integration Capabilities (NSIC) program that will eventually transmit hazard area information to into air traffic controller radar scopes and add decision support tools to the ATC environment.

The FAA is dedicated to continuing to collaborate on these efficiency efforts and appreciate Southwest’s continued efforts to collaborate. If you wish to learn more about the Space related safety operations – they

can be found in this recent FAA briefing: [FAA Safety Briefing May June 2023](#).

– Elizabeth McGovern Assink, FAA ATO Space Operations