Press Release: A National Airspace Redesign (NAR), Subgroup for Oceanic Airspace Redesign (SOAR) project.

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National Airspace Redesign

In the United States, the large volume of air traffic, and the high complexity of the airspace were causing significant delays across the entire National Airspace System (NAS). Backups and delays were worsened when severe weather halted departures, and lengthened flights, as aircraft were re-routed to avoid storms, or aircraft are placed in holding patterns over already congested airports. The question for airspace designers was how could more aircraft fly safely in this finite airspace. A Federal Aviation Administration program called the National Airspace Redesign, or NAR, is addressing this question. The NAR restructures existing domestic and oceanic airspace to increase efficiency and maintain the highest level of safety. Through NAR, the FAA is making incremental changes to the national airspace structure; keeping up with new technology, and responding to customer and air traffic needs.

In May of 2002, under the auspices of NAR, a sub-group to work on Oceanic Airspace Redesign was created. This Sub-Group for Oceanic Airspace Redesign (SOAR) team consolidated regional oceanic airspace into three categories: Pacific, Atlantic, and Gulf of Mexico. This action provided an opportunity to standardize procedures and implement changes across regional oceanic airspace. The following SOAR projects are examples of how NAR is striving to derive workable solutions regarding the national airspace in, among other locations, the Gulf of Mexico and south Florida.

Airspace Boundary Realignment in the Gulf

All airspace beyond twelve miles offshore in the Gulf of Mexico is considered international airspace. In cooperation with the International Civil Aviation Organization (ICAO), the United States Federal Aviation Administration (FAA) is responsible for providing air traffic services over an area of approximately one half of the Gulf of Mexico. The en-route air traffic control facilities at Houston, TX (ZHU), Miami, Florida (ZMA) and Jacksonville, Florida (ZJX) provide air traffic control services to approximately 1,000 high altitude flights operating in this area per day.

Those flights operating close to shore are covered by one of the many radar sites ringing the Gulf of Mexico, allowing them to safely operate with closer, more efficient radar separation standards. However, as one travels further south into the Gulf, the similarities to domestic airspace end. In this offshore area Air Traffic Controllers must apply work and time intensive manual non-radar separation procedures to safely control flights.

Exacerbating this situation is the fact that the en route airspace in the Gulf is also impacted by communications, surveillance, and automation limitations. A mixed environment of radar versus manual non-radar procedures negatively impacts capacity by forcing controllers to use larger separation standards between aircraft.

Aviation customers in the air carrier, military, and general aviation fleets operate flights just off the coast line, in the Gulf of Mexico, between the west coast of Florida, in the vicinity of Sarasota, and the Louisiana coastline, at Leeville. This route provides the most efficient service to customers traveling to and from Florida on flights originating in or flying over the regions of Houston and Fort Worth, Texas.

Throughout the year, and especially during the peak thunderstorm season (which occurs during summer months) aviation service providers intermittently lose access to the most economical routes due to procedural concerns of the air traffic service provider. Pilots need to avoid dangerous thunderstorm activity, but must obtain approval from air traffic control before initiating a change of course to navigate around these storms. If these flights travel too far to the south, they fly beyond radar coverage and may pose a conflict with other flights. As a result, air traffic control must limit how far off course these flights go in order to accomplish their safety driven mission based on operating rules of ICAO. When flights request to fly beyond certain limits, the most efficient routes are then closed to flights until the thunderstorm activity subsides.

The result of closing the Gulf routes is multifaceted. Flights must be routed over the Florida panhandle through southern Alabama, Mississippi, Louisiana and Texas to get back on course. This results in extended flight times, increased operating expenses and missed flight connections for airline customers. This impeded traffic flow also impacts the air traffic service provider through an increased demand on busy air routes. This scenario can occur as often as twenty-eight days a year.

The impact to a typical commercial jet aircraft would mean flying an additional 93 miles per flight. With 158 flights crossing this airspace daily, closing the routes the entire day could reach an operations cost increase of $102,384* to these aircraft. This does not take into account the costs of missed connections to the airlines or to their customers in terms of time or money.

Accordingly, the Air Traffic Managers from Houston, Miami and Jacksonville met in April 2003 to seek a method to resolve this service concern along with other airspace improvement ideas.

A decision was made to modify the geographic responsibility of air traffic control in a portion of the Gulf of Mexico that lies approximately mid point between Leeville, Louisiana and Sarasota, Florida (due south of Crestview, Florida). This change would place the responsibility of providing air traffic control services in this location with the Jacksonville Air Traffic facility.

The Houston and Miami air traffic facilities provided the Jacksonville air traffic facility with a larger geographical portion of airspace to manage flights under radar control along these offshore routes. As of June 1, 2003, flights on these routes can now deviate in excess of forty miles south of their routes for weather avoidance while remaining under radar control. This change creates the ability to avoid closure of these time saving and fuel-efficient routes in many cases. It provides customers with increased flexibility and better access to efficient routes while maintaining the integrity of the air traffic system.

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*Based on full day closure of the Gulf Routes, average increase in mileage 93 nautical miles, Flight Time~12 min @ 450 KPH~ Nov. 20, 2002: 158 Flights, ATA Avg. $54/min operating costs.

Airspace Boundary Realignment in Southern Florida

Another consideration at this meeting addressed airspace management for flights between southern Florida to and from Mexico and destinations beyond.

The division of responsibility between the ZMA and ZHU air traffic facilities lies east and west of 86 degrees west longitude. ZHU provides air traffic control service utilizing manual control procedures that is a process of flight data management. ZHU Air Traffic Controllers track the progress of flights based on position reports from pilots, other air traffic facilities that include the Merida, Mexico (MID) Area Control Center (ACC), the ZMA Air Route Traffic Control Center (ARTCC) and New York Aeronautical Radio (ARINC) which is a commercial radio operations service in New York City, New York.

This system requires that the control facilities coordinate flight data from one facility to the next as a flight transits from one designated area of control responsibility to the next. Direct pilot/controller communications is not always available. Any change to a flight requires a controller to make contact with another controller to ensure this change does not create a conflict for the next control position responsible for the flight.

This system of checks and balances is work intensive for the service provider. While effective at providing safety related functions, it limits other service considerations due to the lead-time required to make changes to flight paths or cruising altitudes. Because of this situation customers may not be able to operate at their most fuel efficient or comfortable cruising altitudes. To provide the basis for additional traffic growth along with future route structure, workload concerns needed to be addressed. Also, the operating environment in the Gulf can cause aircraft operators to fly at lower, less efficient altitudes or fly longer routes.

In an effort to remedy this situation a geographical realignment of airspace was designed. The realignment moved the control responsibility of Houston Center to the east. This geographic expansion provides Houston Center with increased radar control capability in order to remove some of the required verbal coordination for time/altitude changes. This change creates the situation where a single air traffic control facility is responsible for the decision making process and in turn provides more flexibility for customers and a more timely response to customer requests.

This airspace realignment provides a foundation for future traffic growth and route expansion when communication, navigation and surveillance technologies are further developed and implemented.

Additionally, an evaluation of a surveillance system is underway for low altitude flyers in the Gulf of Mexico. The test equipment is in place in Lafayette, Louisiana and in a test area in the Gulf of Mexico. Other design efforts at Houston Center are investigating what current technologies can be implemented to safely reduce separation standards.