AERONAUTICAL CHARTING FORUM
Charting Group
Meeting 17-01 – April 26 - 27, 2017

RECOMMENDATION DOCUMENT

FAA Control # ACF-CG RD 17-01-311

Subject: Temporary Flight Restriction (TFR) Charting: Recommendations of the RTCA Tactical Operations Committee

Background/Discussion:

In 2016, Lynn Ray, Vice President of Mission Support Services and the Designated Federal Official of the RTCA Tactical Operations Committee, tasked industry to make recommendations regarding graphical TFRs. The committee, co-chaired by AOPA and Jeppesen, delivered their final report to the FAA in December 2016, which contained several charting recommendations.

1. **Long-term TFRs should be charted on Sectional and Terminal Area Charts.**

The FAA does not have standardized criteria for determining when a TFR should be depicted on a Sectional or Terminal Area Chart. Several TFRs of lengthy duration, specifically Kennedy Space Center, Camp David, and Washington D.C., have been charted for years while in 2016, the Disney Land and Disney World TFRs were added to their geographically affiliated chart. Charting TFR airspace has been shown to increase awareness and compliance. The most notable impact has been the reduction in the incursion rate occurring in the Washington D.C. area.

The 2005 Volpe study on TFRs noted the benefits of having long-term TFRs charted as it increases awareness of the restrictions within an area thereby increasing compliance. Charting this airspace also increases comprehension of the NOTAM and reduces the opportunity for an incursion. Human factors dictate that a visual depiction enhances awareness and vastly reduces loss of information in translating large sections of text into an avoidance area along a pilot's route of flight.

The VFR pilots who choose not to talk to air traffic control are the target audience for this intervention as they are the individuals most likely to violate a TFR unknowingly. Sectional and Terminal Area Charts are the primary resource for VFR navigation and are therefore the most important resources on which TFRs could be charted.

2. **Long-term TFRs should be identified using standardized criteria.**

In order for a TFR to be designated 'long-term' and charted, it should first meet certain criteria. Most TFRs last a limited amount of time so few will need to be charted. Recommended criteria for identifying long-term TFRs include the following:

1. It will be necessary to issue a TFR for this airspace in the foreseeable future.
    a. Foreseeable future is considered to be at least two sectional chart cycles or 12 months.
2. The flight restriction will be consistently defined with the same lateral limits.
3. Flight restrictions will impact the airspace:
    a. At least 30 separate days of the year; or
    b. The airspace is subject to routine TFR issuance (i.e., Camp David, Kennedy Space Center).

Certain metroplex areas, such as Los Angeles and New York, are frequently impacted by VIP TFRs that encompass all of the Class B airspace. There is no benefit to charting VIP TFRs for these expansive areas as they are impacted inconsistently despite possibly meeting the 30 day per year threshold.

Exceptions dictate that the FAA discuss the projected TFR need and long-term plan with the TFR proponent prior to charting the TFR area. It is also important that the TFR proponent be engaged by the FAA regularly to ensure the TFR need is understood and that changes are optimally aligned with the VFR charting cycle.

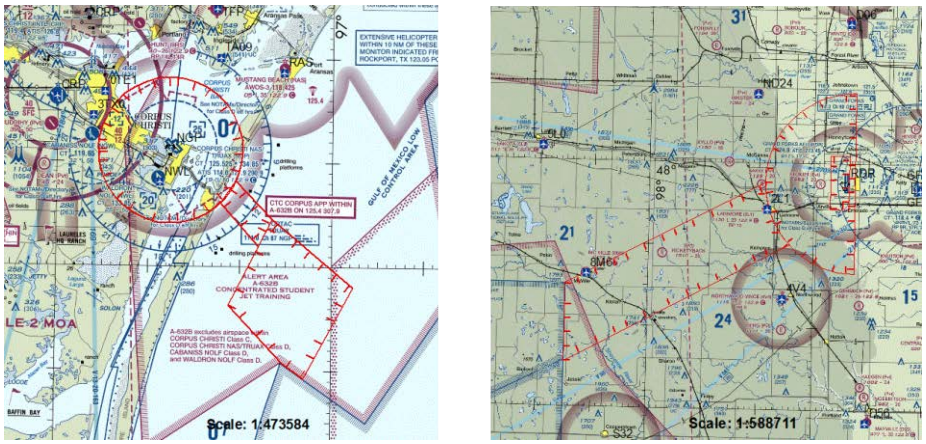
The committee determined that the following TFRs not currently published on charts meet the proposed criteria for charting:

- Andersen Air Force Base – Radiation area (example, FDC 6/5131)
- Beale Air Force Base – Unmanned Aircraft area (example, FDC 6/3017)
- Corpus Christi Naval Air Station – Unmanned Aircraft area (example, FDC 6/2539)
- Dallas, Texas – Former President Bush (example, FDC 9/2934)
- Grand Forks Air Force Base – Unmanned Aircraft area (example, FDC 6/3025)
- Kilauea, Hawaii – Volcano (example, FDC 5/7637)
- Libby Army Airfield – Unmanned Aircraft area (example, FDC 6/4292)
- Vieques, Puerto Rico – Naval Training Range unexploded ordinance area (example, FDC 6/1484)
- *New York, New York – Trump Tower (example, FDC 7/5997)

*Not originally in report

<u>Case study</u>

Two examples are presented below. These airspaces have had countless TFRs issued over multiple years for unmanned aircraft operations with the same lateral and vertical limits always being restricted. The multiple complicated shapes, defined by latitude/longitude points and arcs, are difficult for pilots to interpret.



Examples of areas considered to be long-term TFRs and worthy of being charted: Corpus Christi Naval Air Station (left) and Grand Forks Air Force Base (right)

3. **The FAA should retain the issuance process for long-term TFR NOTAMs, regardless of part-time or full time activation, even after that TFR NOTAM has been charted.**

Maintaining the existing NOTAM process for charted TFRs is important for ensuring pilot awareness, facilitating electronic depiction of the impacted area by automation, and ensuring that operators who do not use FAA products have access to the information in a standardized manner. Continuing to utilize the NOTAM process will ensure that those TFRs which are charted, but have irregular schedules, continue to be briefed to pilots by Flight Service specialists.

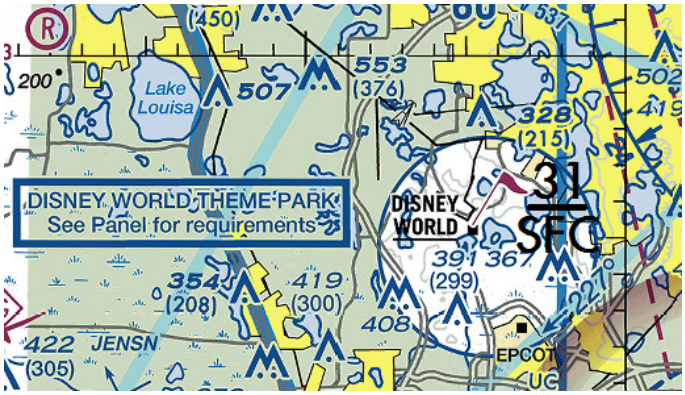
4. **The FAA should standardize the charting requirement documents for TFRs to ensure consistency and to reduce pilot confusion.**

The FAA does not have a standard charting specification for TFRs on Sectional or Terminal Area Charts. The following areas are currently charted: Disney Land and Disney World, Kennedy Space Center, Washington DC, and Camp David. Each location has a different depiction method. Standardizing the symbology will improve pilot recognition, facilitate simpler education and allow uniform guidance.

Unique charting depictions for areas governed by a TFR. From left to right, the Kennedy Space Center, Washington DC and Camp David.

Additionally, the applicable TFR altitude restrictions are not being charted. Depicting the altitude floor and ceiling, such as how it is depicted for Class C airspace, would provide further dimensional information to the restriction and improve pilot compliance.
The following depiction standards for Sectional and Terminal Area Charts are suggested:

1. Utilize Disney Land/Disney World charting standard (embraces Volpe recommendation; similar to Part 93 areas).
2. Depict TFR altitude floor and ceiling in MSL similar to Class C airspace (Volpe recommendation).
3. Sustain the TFR note inclusion with reminder for the pilot to check NOTAMs.
4. For multiple TFRs in the same area, or multiple areas within the same TFR, delineate the different areas and provide the altitude floor and ceiling for each area. We recommend utilizing the same solid blue line used for the boundary to define the different individual areas.
5. If a long-term TFR area has inconsistent altitude restrictions but consistent lateral dimensions (e.g., Grand Forks AFB), do not depict the altitudes on the chart, but include within the TFR a note stating that impacted altitudes vary and to check NOTAMs.



Disney World depicted on a sectional chart with a mock-up of how altitude information may be included

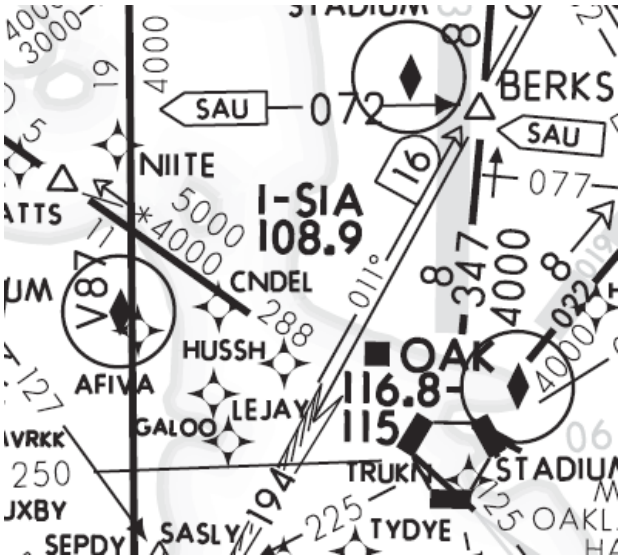
5. **The FAA should modernize the Sectional and Terminal Area Chart production process to achieve a 56-day charting cycle.**

The FAA should transition to automated, electronic chart production for Sectional and Terminal Area Charts as soon as possible to allow for reduced time between publication cycles. Reducing the amount

of time between publication cycles would better facilitate the charting of TFRs and the ability to conduct "data driven" charting. Using automation would allow FAA Sectional and Terminal Area Charts to be layered so that users, at their discretion, could turn on and off certain charting symbology which would facilitate reductions in chart clutter near TFR areas.

6. **The FAA should make sporting event venues and their 3NM radius lateral rings available on controller charts.**

The FAA should provide sporting event TFR locations on the controller chart as well as the 3NM rings associated with them. Below is a mockup of a controller chart with sporting event TFR locations depicted along with the 3NM circle restrictions.



Controller Chart Mockup with Sporting Event TFR Location

There are inconsistencies among ATC and FSS facilities in regards to passing on TFR graphics to specialists. For example, OASIS allows Flight Service specialists to see a graphic but, given they are not always available, there is potential for missing this in briefings. This is similar to a pilot missing a TFR because there is no graphic provided. The FAA should make it mandatory that every ATC facility provide a TFR graphic to their controllers and allow the controllers to depict the impacted areas on their displays.

If an actual graphic depiction is consistently attached to the TFR data, that depiction could be distributed to ATC. An account has been provided by a committee member detailing a current practice of TFR circles and polygons being hand drawn on an applicable portion of a sectional chart. The "graphic" is then copied on a printer and placed at each affected sector desk.

7. **The FAA should depict sporting event venues with over 30,000 seats on ATC radar maps.**

This would allow exact location of the venue to be depicted for controllers.

8. **The FAA should depict long-term TFRs on ATC radar maps.**

This requirement will ensure consistency between facilities and reduce the need for the manual creation of the restricted area.

ERIDS can fail to parse out a TFR depending on the NOTAM's format. ERIDS displays all NOTAMs for the area covered. If the NOTAM is valid, it will be displayed in ERIDS. If the NOTAM does not populate in ERIDS, the controller will not have the information to display the TFR. There are times when the TFR is in adjacent airspace and the controller may not have the TFR NOTAM in their ERIDS. However, controllers regularly deal with operational situations where a constraint near a sector impacts operations. In such situations, controllers regularly coordinate with each other.

Recommendations:

1. Long-term TFRs should be charted on Sectional and Terminal Area Charts.

2. Long-term TFRs should be identified using standardized criteria.

3. The FAA should retain the issuance process for long-term TFR NOTAMs, regardless of part-time or full-time activation, even after that TFR NOTAM has been charted.

4. The FAA should standardize the charting requirement documents for TFRs to ensure consistency and to reduce pilot confusion.

5. The FAA should modernize the Sectional and Terminal Area Chart production process to achieve a 56-day charting cycle.

6. The FAA should make sporting event venues and their 3NM radius lateral rings available on controller charts.

7. The FAA should depict sporting event venues with over 30,000 seats on ATC radar maps.

8. The FAA should depict long-term TFRs on ATC radar maps.

Comments:

One additional recommendation pertinent to charting was also noted by the RTCA committee. It is provided below for awareness.

1. **The FAA [Sporting Event TFR] depiction is adequate and the FAA should sustain their sporting venue charting effort.**

Until this year, the FAA had not depicted all venues impacted by the sporting event blanket TFR on Sectional or Terminal Area Charts. Failing to chart these locations and uniquely depict them as a location impacted by the blanket TFR increases the chance for unintentional non-compliance. The committee agreed that charting the area impacted 3NM (nautical mile) radius around sporting event TFR locations was not preferred, as these areas are inactive a majority of the time. Their depiction could create the falsehood of a constant 3NM radius restriction around stadiums.

The FAA has begun charting all venues impacted by the blanket sporting event TFR (30,000+ seats) with the symbol below:

The STADIUM, RACEWAY, etc. naming would accompany the diamond symbol at the actual location that the TFR is predicated upon.

The participant list of the RTCA Graphical TFR Task Group that drafted the report that was approved by the Tactical Operations Committee is below (FAA participants provided subject matter expertise and do not necessarily endorse the recommendations).

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