

AERONAUTICAL CHARTING FORUM
Charting Group
Meeting 12-02 – October 24-25, 2012

RECOMMENDATION DOCUMENT

FAA Control # 12-02-254

Subject: VFR Chart clutter caused by overlapping Class B and Class D airspace borders.

Background/Discussion:

VFR Terminal Area Charts and Sectional Charts are cluttered with overlapping Class B and Class D airspace borders to the extent that confusion and worse, distractions are created. The charting format of these two airspace classifications in large terminal areas is inconsistent. The net effect is that a pilot accustomed to one particular presentation in the airspace he/she frequents could result in an airspace incursion/violation at another location. As pilots, it is our obligation and responsibility to manage our cockpit environment and flight operation. Sensibly designed chart products will go a long way toward eliminating distractions to maximize efficiency and safety.

The Federal Register may contain detailed descriptions of these installations and AIM 3-1-3 certainly describes the *Hierarchy of Overlapping Airspace Designations*; However, all that is usually lost on a pilot attempting to multi-task and compartmentalize his/her operational priorities. We pilots *navigate* by the chart products commercially made available to us, NOT by the dry descriptions in the Federal Register. It is essential to sanitize these commercial products of potential distractions by taking a farsighted look at the consequences of chart clutter.

The following is a list of examples, some of which are charted sensibly, most are not and all are inconsistent:

KSQK & KPAO under KSFO

Here the Class D airspace in these two individual neighboring examples is divided into approximate halves by publishing TWO distinct *"Ceiling of Class D Airspace in hundreds of feet"* indications: [20] and [-15]. This feature adds a sense of clarity to an otherwise cluttered presentation

However, a pilot has to look very close to see the [-15] east of KPAO actually apply to the tiny, northwest corner overlap of the Class C airspace 40/15 shelf. Notice the 40/15 Class C shelf (magenta) east of KPAO sits directly under the 100/40 Class B shelf. This notation should be changed from 40/15 to T/15.

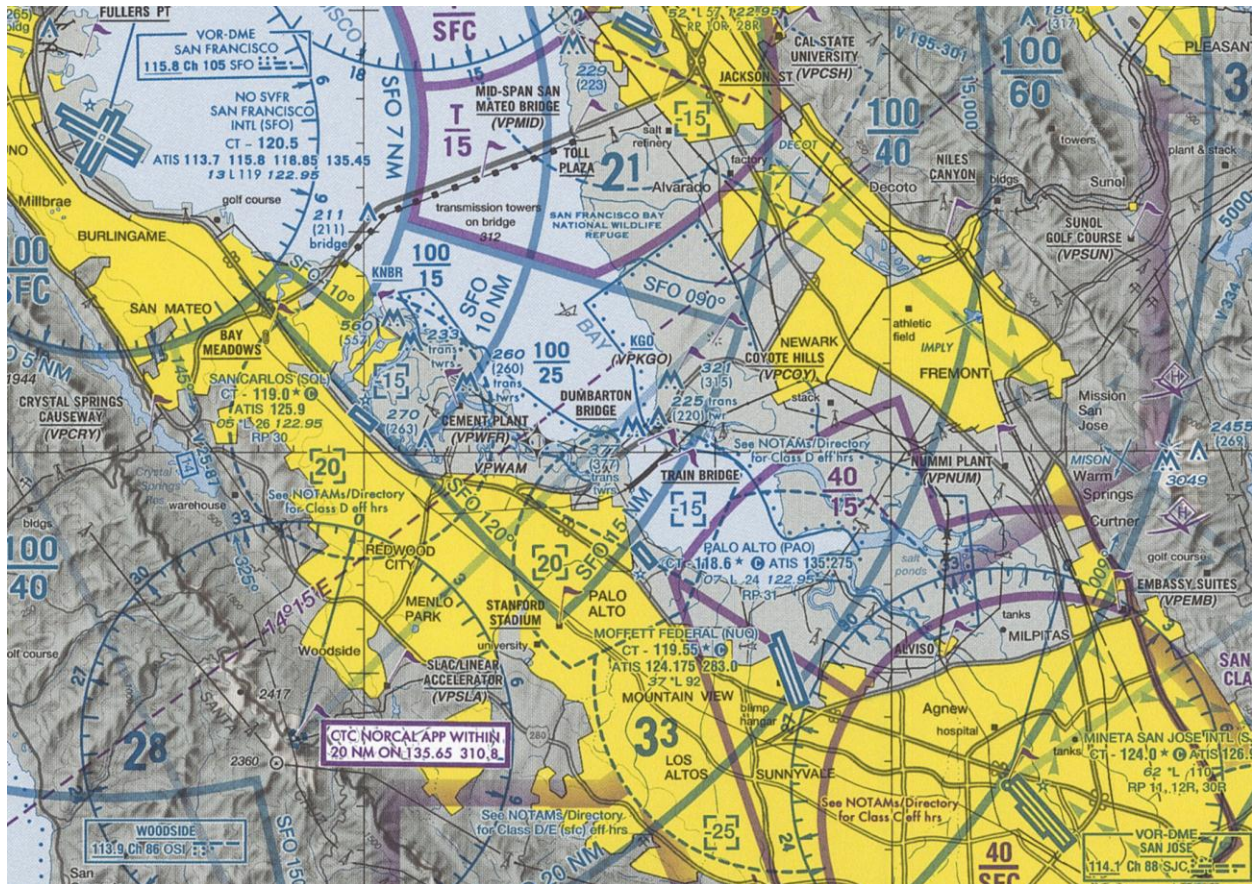


Figure 1 – Terminal Area Chart – San Francisco

[Continued on next page]

KSQL & KPAO under KSFO (continued)

Notice on the San Francisco Sectional Chart, the east half of KPAO Class D is camouflaged with the other chart details jammed into a limited space. Although the [-15] is published on the Section Chart, it could easily be missed in all the clutter by a pilot flying without a TAC. The [-15] actually applies to the tiny, northwest corner overlap of the Class C airspace 40/15 shelf. The presence of the [-15] directly next to [20], within Class D, under the 100/25 Class B shelf and all cluttered within the presentation is contradictory and counterintuitive.

See recommendation {2}.

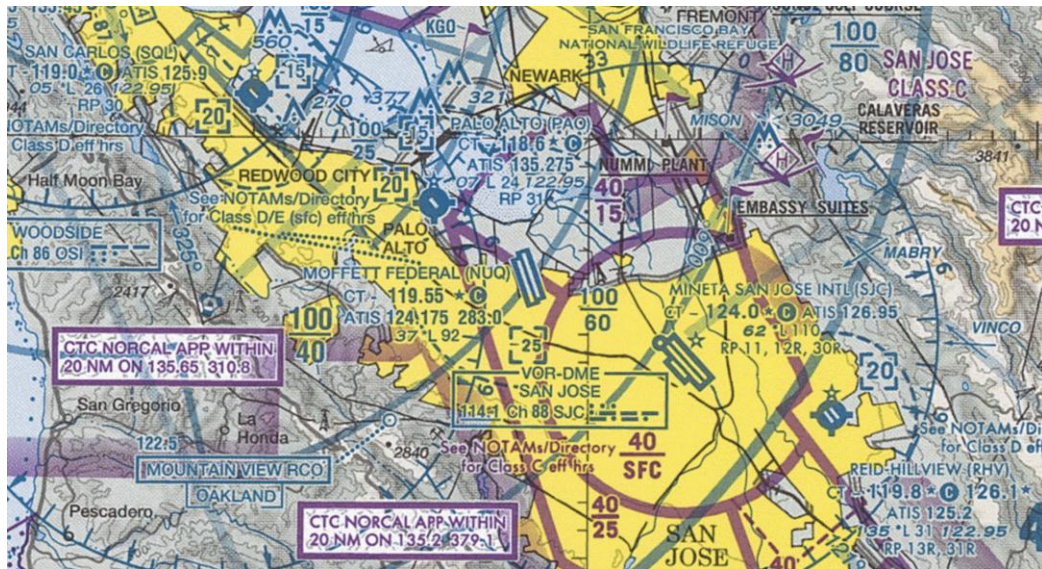


Figure 2 – Sectional Chart – San Francisco

KBFI under KSEA

A pilot has to look very close and study hard to sort through all of the parallax to find the actual Class D sectors airspace that *truly* top out at [25]. On the TAC we see the [25] under a 100/20 shelf. The [25] actually applies only to the northeast corner next to East Channel Bridge and to the west in Puget Sound.

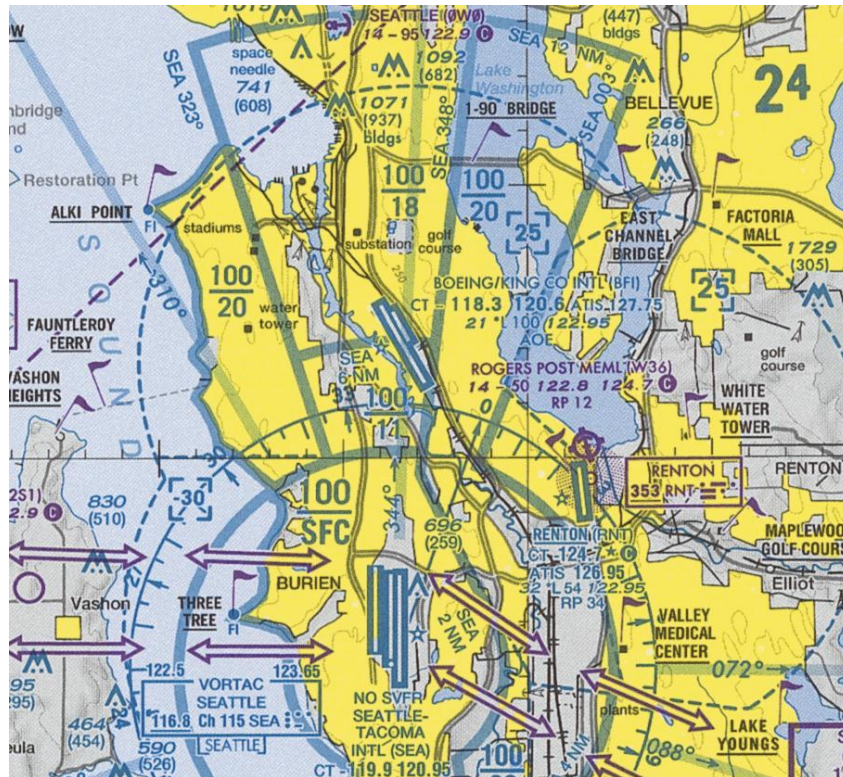


Figure 3 – Terminal Area Chart – Seattle

The clutter on the Seattle Sectional Chart really confuses the situation by completely squeezing out the East Channel Bridge. The [25] to the northwest of KBFI is published under the 100/20 Class B airspace shelf when it actually applies to the sector over Puget Sound immediately west of the 100/20 shelf. This sort of inconsistent detail presentation is sloppy and counterintuitive. The confluence of detail here needs to be revisited with fresh eyes. (See recommendation {1} & {2} & {3})

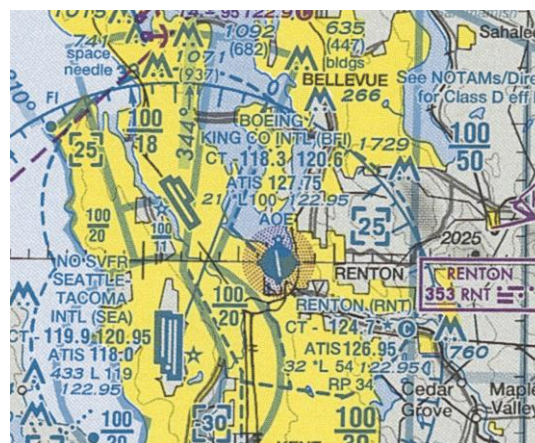


Figure 4 – Sectional Chart – Seattle

KTEB under KEWR

This has to be the strangest depiction of Class D under Class B anywhere. The TAC at 1:250,000 chart scale is still so cluttered that a separate message box is required to clarify exactly where Class D actually tops out (up to but not including 1800'). Notice the [25] buried in the clutter between 70/30 and the KTEB runway pattern.

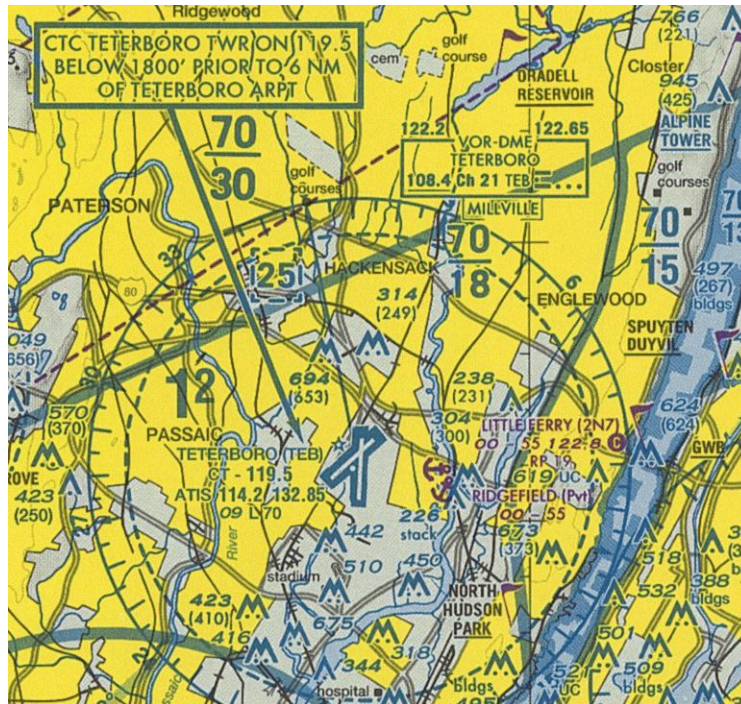


Figure 5 – Terminal Area Chart – New York

This message box does not make it to the New York Sectional Chart probably because of the multiple layers of overlapping clutter. However, the [25] is certainly prominent and implies all of the Class D airspace tops out at 2500'. According to the TAC, the [25] applies to less than 10% of the total Class D airspace that is also ENTIRELY OUTSIDE of the Class B airspace.

It is quite possible to miss the fact that 70% of Class D airspace top out at [-18] and 20% tops out at [-15] to the east, when a Pilot chooses to fly with ONLY the New York Sectional Chart.

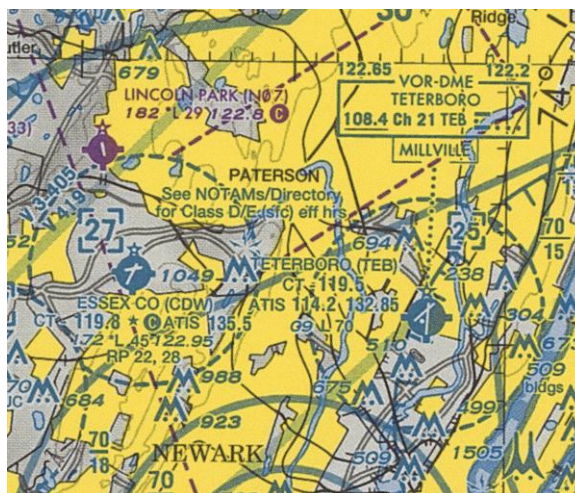


Figure 6 – Sectional Chart – New York

KTEB under KEWR (Continued)

Consider this plausible scenario:

- (a) TEB is in a north flow,
- (b) A VFR pilot is flying with only the Sectional Chart on his/her lap arrives from the north,
- (c) The pilot identified and zeroed in on the [25] on the Sectional which is in large font and fails to notice the 70/18 published to the left of "NEWARK" in a smaller font.
- (d) The pilot plans his/her descent to arrive at the edge of Class D between 2000' and 2500' with further descent to pattern altitude (1000') inside Class D.
- (e) The pilot contacts TEB tower outside Class D and if he/she is lucky, the tower controller will warn him/her about the Class B airspace about to be violated in time to avoid it, Or;
- (f) It is never the tower controller's responsibility to navigate for a pilot so it is more likely this pilot will violate Class B airspace somewhere between 1800' and 2500'.

The TAC and especially the Sectional Chart in their present form do a real disservice to the Flying Public with those convoluted presentations at TEB.

KPIE under KTPA

Here Class D airspace is very deceptive. It appears that the Class D airspace indents up against the KTPA Class B surface area. The portion of the Class D indentation should **superimpose** a continuous blue-tic border under the corresponding Class B ring in the similar format at KNEW. The reality is 60% of the KPIE charted Class D actually tops out at [-12]. This detail should be published in a similar format to KSQL and KPAO on both the TAC and Sectional Charts.

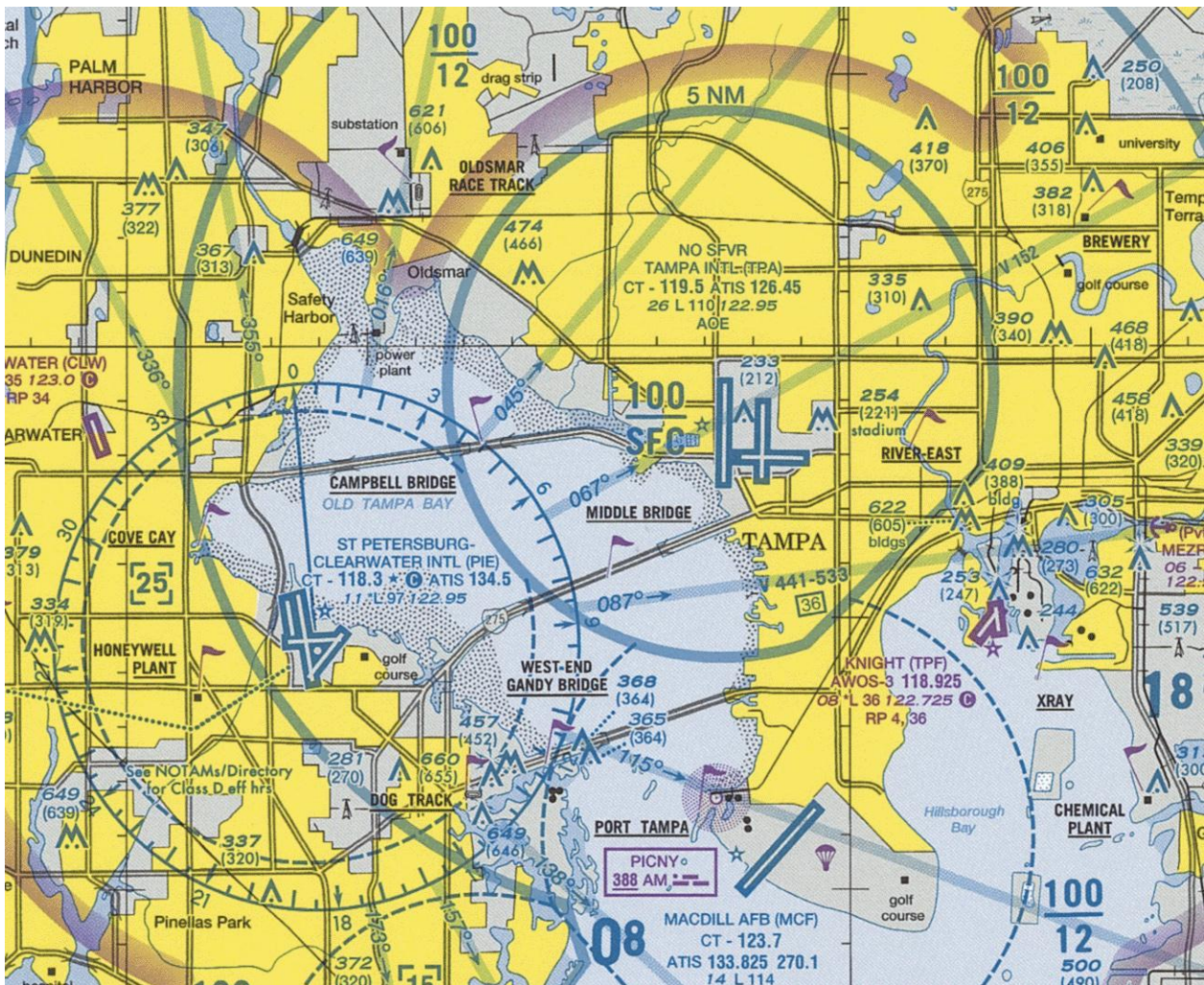


Figure 7 – Terminal Area Chart – Tampa

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KPIE under KTPA (Continued)

The Miami Sectional Chart presentation reinforces this deception. The [25] applies only to 40% of the KPIE Class D airspace sector west of the overlying Class B ring.

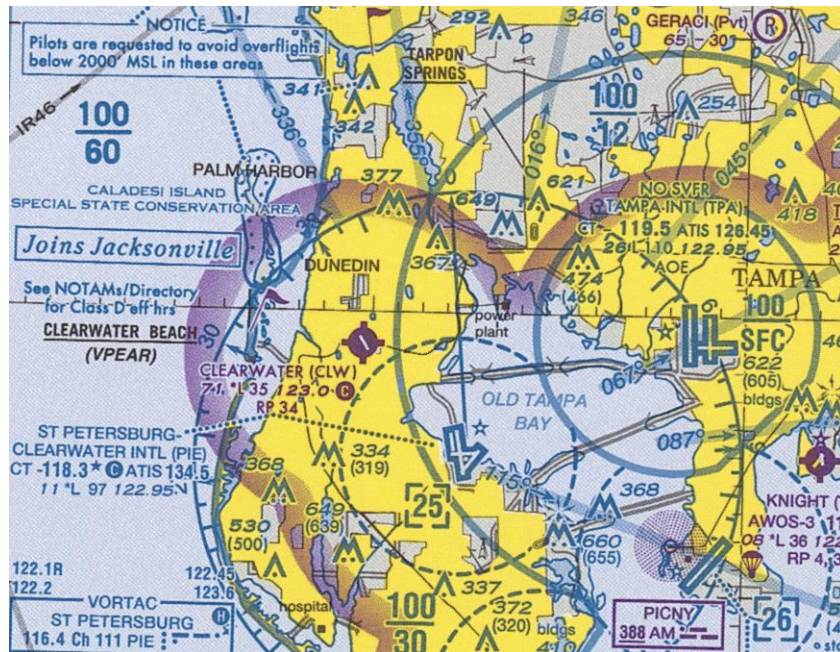


Figure 8 – Sectional Chart – Miami

The following examples demonstrate charting Class B airspace can be both flexible and accommodating:

KNEW under KMSY

The Class D airspace sits directly under a single Class B shelf. The image below demonstrates how a balance between Class B and Class D airspaces can be achieved with a clearly depicted COMMON and NOT OVERLAPPING border.

Superimposing the blue-tic border of Class D border directly under the Class B ring is the best possible presentation. There can be no confusion as to where the vertical and lateral limits of Class D airspace are located as any overlap and corresponding clutter has been eliminated.

(See recommendation {1})

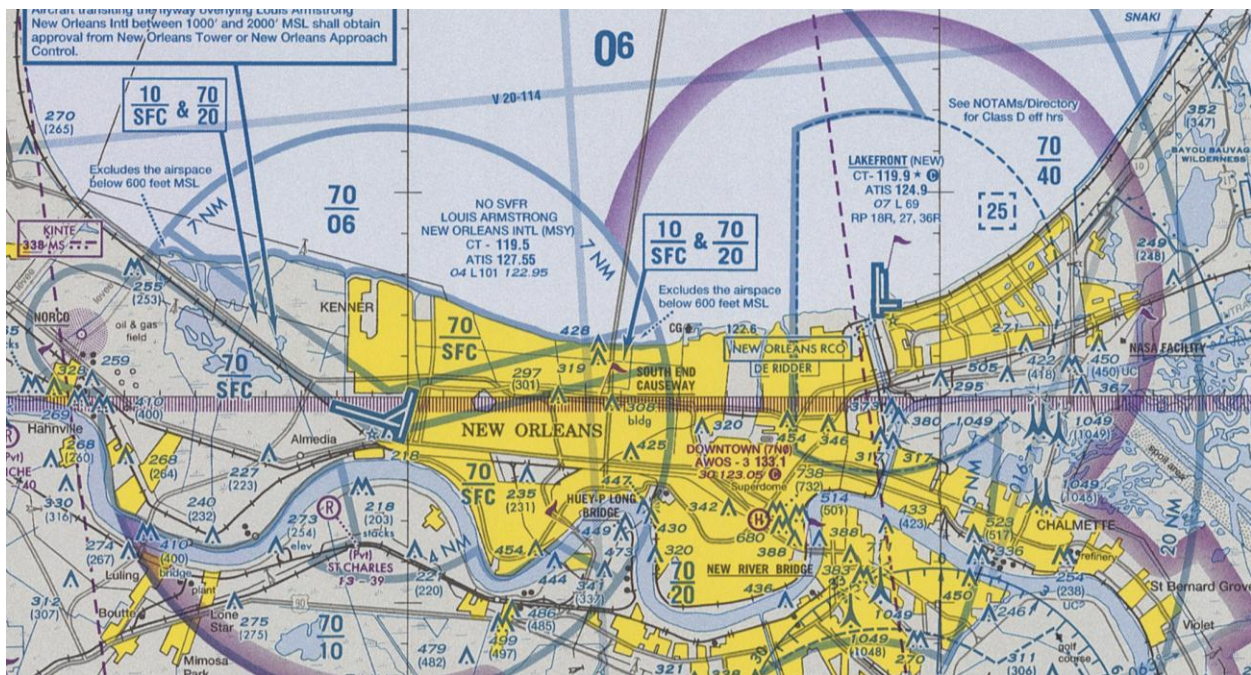


Figure 9 – Terminal Chart - New Orleans

KAKH under KCLT

Here a “ring” of Class B follows Railroad tracks to the west of KAKH and over the towns of Clover and York to accommodate VFR traffic transitioning into and out of KAKH.

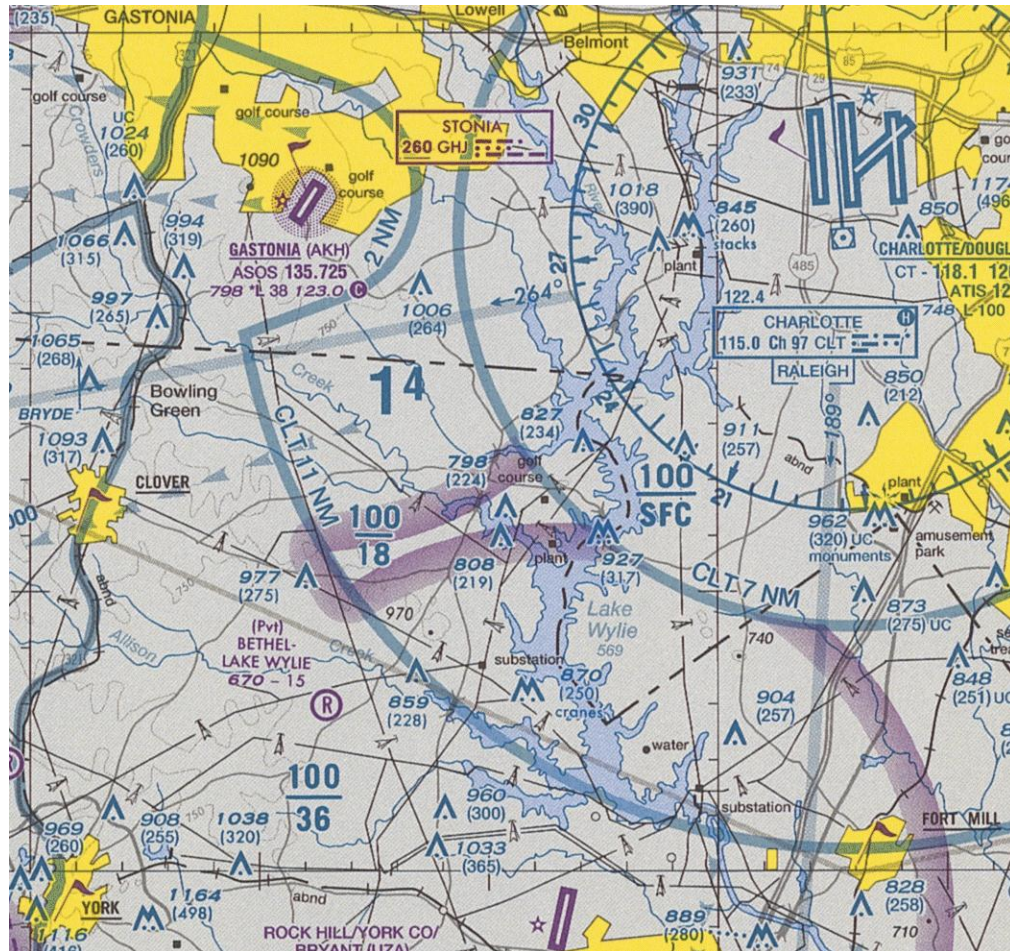


Figure 10 – Terminal Chart - Charlotte

KFME under KBWI

Here Class B indents toward KBWI to accommodate VFR traffic operating in and around KFME.

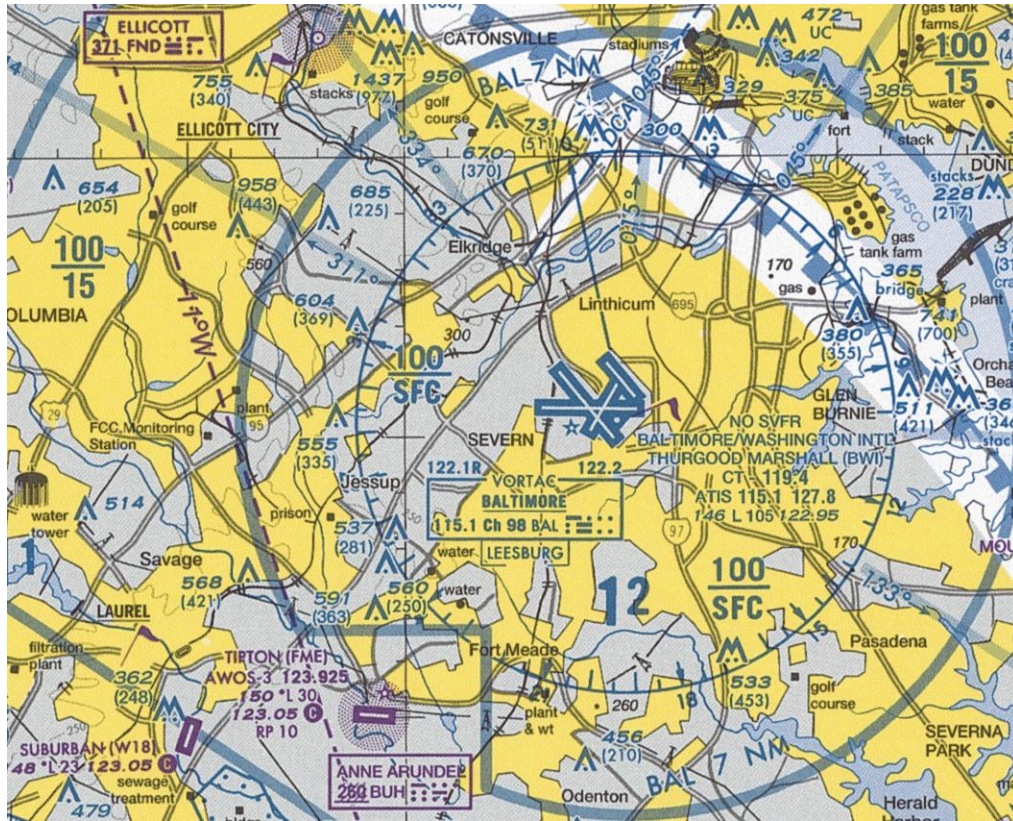


Figure 11 – Terminal Chart - Baltimore/Washington

KFTY under KATL

Here Class B indents (albeit insignificantly) directly into the KATL surface area, an extremely busy terminal.

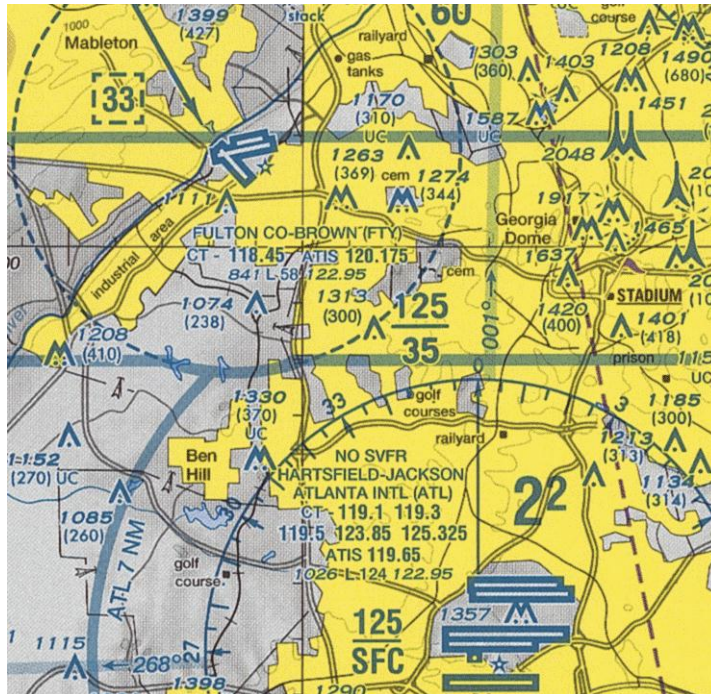


Figure 12 – Terminal Chart - Atlanta

KBKL & "GILBERT" (Pvt) & 4G8 under KCLE

This situation makes for an interesting contrast within the same Terminal Area. The top of KBKL Class D airspace is [-30]. However, the sector of KBKL Class D at [-30] cannot possibly encroach into Class B airspace at and above 1900'. This is an example of why KBKL Class D should indent and **superimpose** under the Class B ring or in the alternative, publish a 2nd Class D top within the [-19] Class D airspace that sits under the Class B airspace similar to KSQL.

"GILBERT" (Pvt) appears to force Class B airspace to indent not only toward KCLE but is also into the Runway 6L and 6R extended centerlines. The sad fact is, the best information available indicates "GILBERT" (Pvt) no longer exists and probably for a very long time. Perhaps the 5nm Class B ring should reclaim that airspace to discourage VFR pilots from interfering with KCLE Runway 6L and 6R descending arrivals.

4G8 is currently a functional airport whereby no Class B indentation was ever provided. Aircraft arriving from and departing to the northeast must exercise extreme caution so as not to violate the KCLE Class B Surface Area less than one mile away. The contrast with "GILBERT" (Pvt) is striking. It makes me wonder just what exactly is the criteria for determining Class B airspace boundaries around satellite airports and how often the configuration is revisited for operational currency and priority.

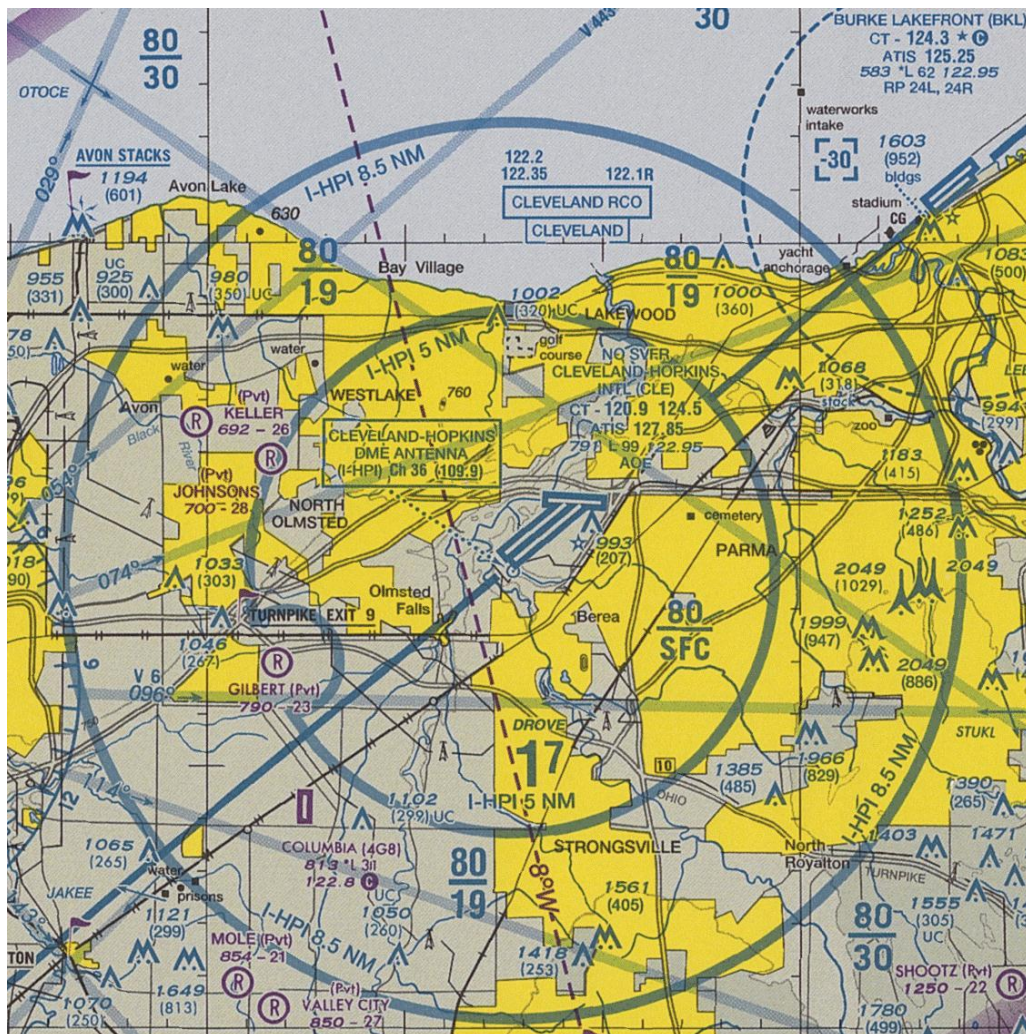


Figure 13 – Terminal Chart - Cleveland

Recommendations:

Summary: A fresh look and a careful examination of **ALL** Class D airspace sectors under Class B terminals should be initiated to reduce clutter, confusion and distractions and increase efficiency and ultimately safety. Many examples exist that demonstrate the flexibility available in chart design. It is essential to look at the practical application of the finished chart product from the *pilot's perspective* because the chart is a critical tool he/she is dependent upon during preflight action and in flight. A *consistent format* will establish the standard that pilots will learn to rely upon.

Specific Recommendations:

- 1) **Superimposing** the blue-tic pattern of Class D under the Class B border is the best possible presentation.

There can be no confusion as to where the vertical and lateral limits of Class D are located as any overlap and corresponding clutter have been eliminated.

- 2) Every Sectional Chart containing Class B airspace includes this message box:

```
***** _ _ _ _ TERMINAL AREA *****
*   Pilots are encouraged to use the _ _ _ _ VFR   *
*   Terminal Area Chart for flights at and below xx,xxx' *
*****
```

Consider the wisdom of *removing* the majority of detail (and associated clutter) other than runway alignment and obstruction symbols that appear within the Class B airspace *BOX* on SECTIONAL Charts and change the message box to read:

```
***** _ _ _ _ TERMINAL AREA *****
*   Pilots are REQUIRED to use the _ _ _ _ VFR   *
*   Terminal Area Chart for flights at and below xx,xxx' *
*   within this airspace                               *
*   (FAR 91.103 Preflight Action)                       *
*****
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FAR 91.103 Preflight Action is often cited in violations as a failure caused by the pilot. The clutter in VFR charting products does more to aggravate this problem than mitigate it. It should be the goal of chart design to create a user-friendly, intuitive (and therefore *dummy proof*) presentation.

- 3) The [25] should be placed directly above the [-30] separated by the 47 degree 30 minute parallel. This would alert a southbound pilot to ask for a frequency change and make contact with KSEA before entering the KSEA Class D airspace and vice versa for a northbound pilot. Also, publish a [25] in smaller font next to the *East Channel Bridge*. In the alternative, consider the wisdom of **superimposing** Class D blue-tic pattern with the individual, overlying Class B sectors considering just how small an area [25] actually covers.

This recommendation is specific to this location; However, there are numerous other examples under similar conditions. Each in need of a *consistent format* presentation.

Comments:

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Date: August 30, 2012

Minutes from ACF 12-02:

Ron Haag, FAA/AJV-321, presented the new issue on behalf of the submitter, Mr. Robert Katz, who was not able to attend the ACF. Mr. Katz asserts that the FAA's VFR Sectional and Terminal Area Charts do not clearly depict vertically overlapping Class B and Class D airspace areas, and that there are confusing charting inconsistencies and undo chart clutter caused by current modes of depiction of these areas. Mr. Katz believes that the current depictions of these overlapping airspace areas are such that the confusion and uncertainty caused could result in airspace incursions/violations. Mr. Katz has recommended revisions in charting standards that he believes will improve the charts and help make these complex airspace areas more easily and correctly interpreted.

Ron then [responded on behalf of the Visual Charting group](#). Ron stated that Visual Charting is obligated to depict, independently, the boundaries of the Class B and Class D airspace areas exactly as they are published in the [Federal Register \(FR\)](#) and listed in the [FAA Order JO 7400.9W](#). The outer parameters of each area, as well as the floor & ceiling of each must be depicted. Where more than one area occupy the same space, an overlap exists, but even in these complex areas, AeroNav Products, from a legal perspective, must chart the area parameters from source and not create overlap boundaries not in the legal descriptions. The areas and corresponding text are shown in different colors to aid in discriminating one from another. Ron explained that there will be a day in the not-too-distant future when chart attributes will be able to be viewed in layers. A user could view all of the Class B areas. A user could view all of the Class D areas. For this reason and from a legal liability perspective, all Class airspace areas must be shown independently of each other and when viewed together (as on current paper charts), it is the responsibility of the user to read the chart and make sense of the overlap. Ron commented that Sectional Charts and Terminal Area Charts (TAC) utilize two different scales; Sectional Chart Scale 1:500,000 and TAC 1:250,000. The overlapping airspace areas are understandably more clearly depicted on the larger scale TAC charts. He pointed out that every Class B metropolitan area has a TAC chart that can be consulted.

It was Ron's position that the recommendations brought forward by Mr. Katz would add extra lines and additional altitude values that would actually further clutter the depiction of the airspace.

Melisa McCaffrey, AOPA, expressed that some of the principles applied to the Los Angeles Terminal Navigation Chart (presented earlier as a prototype chart), in terms of colors, etc., might help improve how Class airspace information is depicted (Reference: [Presentation – Los Angeles Terminal Navigation Chart](#)). Melisa agreed with the FAA assessment that the submitter's suggestions would only further complicate matters and add more clutter to the VFR Charts.

John Gale, NBAA, expressed that he agreed with AOPAs comments. He also believes that adoption of the LA Terminal Navigation charting design could help clarify complicated metropolitan airspace areas.

John emphasized that visual charts are a 2-dimensional tool to aid in a pilot's ability to picture 3-dimensional airspace in his mind and as such, are limited.

Valerie Watson, FAA/AJV-3B, commented that a part of the confusion on the chart is rooted in the design of the airspace areas, over which the charting offices have no say.

Brad Rush, FAA/AJV-3B, asked Ron whether there is or has been any dialogue between Visual and those involved with Airspace Design, specifically, Class B Airspace design? Ron answered that there has been no dialogue between Visual and the Airspace Designers. The charting group depicts the legal airspace areas as published by source.

Chris Criswell, FAA/AJV-22, said that he would take the information and feedback from this discussion back to the Airspace Regulations and ATC Procedures Group, FAA/AJV-11, so that the designers of the airspace are aware of the confusion that these vertically overlapping areas cause. Chris reaffirmed Ron's comments on the lack of a process between the Airspace Designers and charting. Chris re-emphasized that Airspace (design) determines chart depiction, charts merely reflect the published areas in the best way they can.

There was a consensus from the group that the matter brought forward by Mr. Katz was not a charting issue but a matter to do with airspace design.

STATUS: CLOSED

ACTION: Ron Haag, FAA/AJV-321, will communicate with the Airspace Regulations and ATC Procedures Group, FAA/AJV-11, and relate the concerns brought up by this RD.