all pilots in filing preferred routes results in fewer air traffic delays and better efficiency for departure, en route, and arrival air traffic service. [Figure 2-15]

Substitute Airway or Route Structures

ARTCCs are responsible for specifying essential substitute airway or route segments (sub-routes) and fixes for use during scheduled or unscheduled VOR/VORTAC shutdowns. Scheduled shutdowns of navigational facilities require planning and coordination to ensure an uninterrupted flow of air traffic. Aeronautical Information Services, in coordination with the ARTCCs, determine when the length of outages or other factors require publication of sub-routes and Flight Program Operations (AJW-3) provides flight inspection services, obstacle clearance verification, certification, and final approval of substitute routes.

Substitute Airway En Route Flight Procedures

A schedule of proposed facility shutdowns within the region is maintained and forwarded as far in advance as possible to enable the substitute routes to be published. Substitute routes are normally based on VOR/VORTAC facilities established and published for use in the appropriate altitude strata. In the case of substitute routes in the upper airspace stratum, it may be necessary to establish routes by reference to VOR/VORTAC facilities used in the low altitude system. Non-directional (radio) beacon (NDB) facilities may only be used where VOR/VORTAC coverage is inadequate and ATC requirements necessitate use of such NAVAIDs. Where operational necessity dictates, NAVAIDs may be used beyond their standard service volume (SSV) limits that define the reception limits of unrestricted NAVAIDs, which are usable for random/unpublished route navigation, provided that the routes can be given adequate frequency protection.

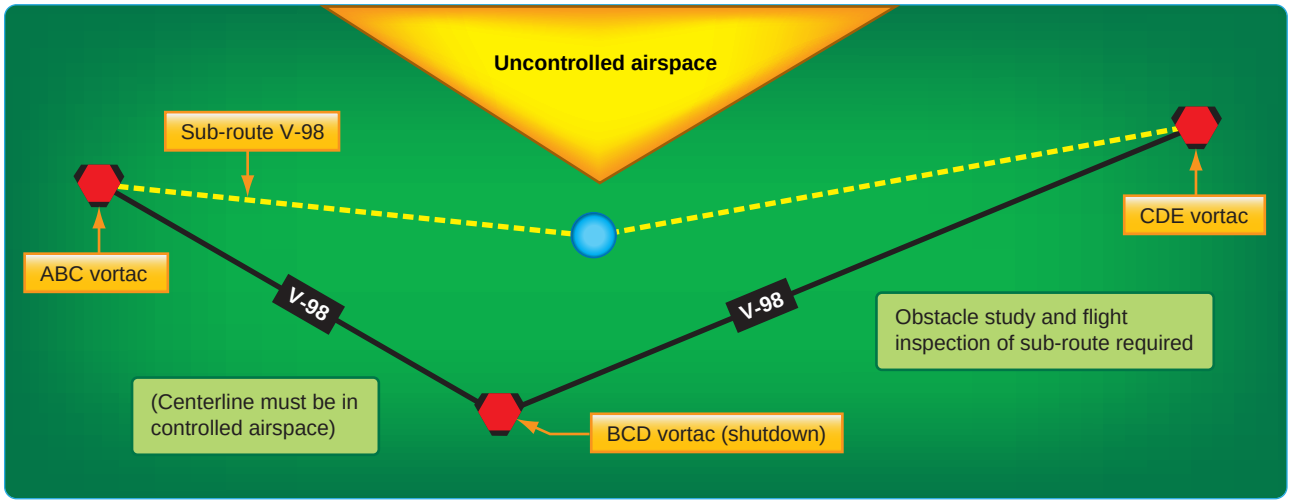

Figure 2-16 14 CFR Part 95 sub-routes.

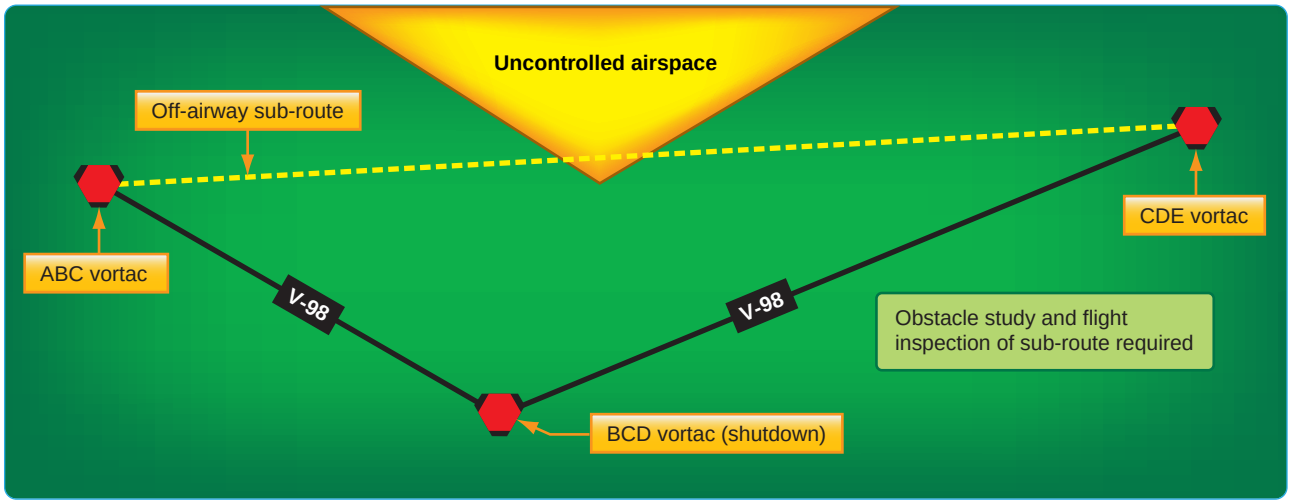

Figure 2-17 Non-Part 95 sub-routes.