Figure 2-11. *Center radar displays.*

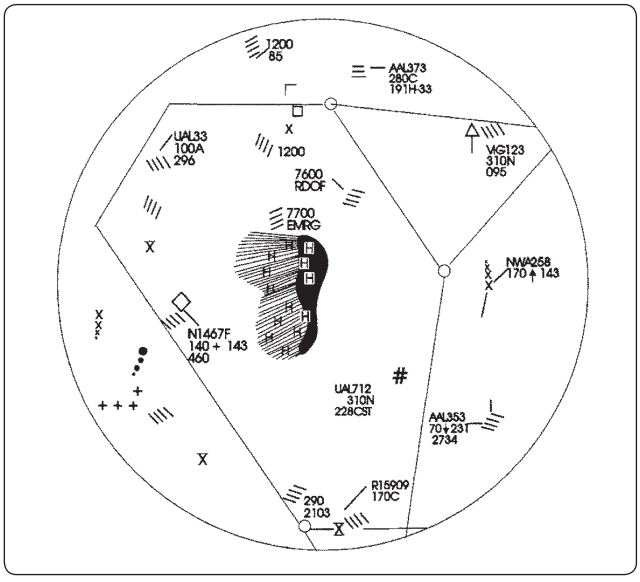

Figure 2-12. *A center controller's scope.*

A common clearance in these situations is "When able, proceed direct to the Astoria VOR…" The words "when able" mean to proceed to the waypoint, intersection, or NAVAID when the pilot is able to navigate directly to that point using onboard available systems providing proper guidance, usable signal, etc. If provided such guidance while flying VFR, the pilot remains responsible for terrain and obstacle clearance. Using the standard climb gradient, an aircraft is 2 miles from the departure end of the runway before it is safe to turn (400 feet above ground level (AGL)). When a Center controller issues a heading, a direct route, or says "direct when able," the controller becomes responsible for terrain and obstruction clearance.

®FORT WORTH CENTER 134.4

H–2–3–4, L–4–6–13–14–15–17 (KZFW)

Abilene –134.25 127.45
Ardmore –132.975 128.1
Big Spring –133.7
Blue Ridge –127.6 124.87
Brownwood –127.45
Clinton-Sherman –132.45 128.4 126.3
Cumby –132.85 132.02 **126.57**
Dublin –135.375 **128.32** 127.15
El Dorado –133.875 128.2
Frankston –135.25 **134.025**
Gainsville –134.15 126.77
Hobbs –133.1
Keller –135.275 134.15 133.25
Lubbock –133.35 127.7 126.45
Marshall –135.1 **128.125**
McAlester –135.45 132.2
Midland (Site A) –133.1 **132.075**
Mineral Wells –135.6 127.0
Monroe –135.1
Oklahoma City –133.9 **132.45**
Paducah –134.55 133.5 **133.35** 126.45
Paris –127.6
Plainview –126.45
San Angelo –132.075 126.15
Scurry –135.75 126.725
Shreveport –135.1 **132.275**
Texarkana –134.475 133.95 **126.57**
Tyler –135.25 **134.025**
Waco –133.3
Wichita Falls –(Site Nr1) - 134.55 132.925
Wichita Falls –(Site Nr2) - 133.5 127.95

Figure 2-13. *A/FD center frequencies listing.*

Another common Center clearance is "Leaving (altitude) fly (heading) or proceed direct when able." This keeps the terrain/obstruction clearance responsibility in the flight deck until above the minimum IFR altitude. A controller cannot issue an IFR clearance until an aircraft is above the minimum IFR altitude unless it is able to climb in VFR conditions.

On a Center controller's scope, 1 NM is about ⅛ of an inch. When a Center controller is providing Approach/Departure control services at an airport many miles from the radar antenna, estimating headings and distances is very difficult. Controllers providing vectors to final must set the range on their scopes to not more than 125 NM to provide the greatest possible accuracy for intercept headings. Accordingly, at locations more distant from a Center radar antenna, pilots should expect a minimum of vectoring.