"Manned Gap Fillers"

When most AC&W radar veterans think of a "gap filler," they usually think of an unmanned radar facility designed to fill the low-altitude gaps between manned long-range radar stations. Gaps in coverage existed due to the curvature of the earth, mountains, hills, valleys, rivers, and so forth. The typical unmanned gap-filler radar annex was comprised of a small **L**-shaped cinderblock building, with the radar equipment and the data-transmission equipment in one section and one or more diesel generators in the other section. These unmanned gap-filler sites generally had a three-legged radar tower about 85 feet tall. A couple of gap-filler radar towers were four-legged, as they also hosted a forest-fire lookout cabin below the radar-antenna deck. Also, at least one GFA building was not **L**-shaped, but most were. Unmanned gap-filler facilities in the continental United States (CONUS) used either an AN/FPS-14 or an AN/FPS-18 short-range search radar having an effective range of 60 to 65 nautical miles. Both models were built by Bendix, and both operated in the S-band at a frequency between 2700 and 2900 MHz.

So what were "manned gap fillers"? Early in the development of AC&W radars for the then-new Semi-Automatic Ground Environment (SAGE) System (early to mid 1950's), the Air Defense Command wanted certain gaps in long-range radar coverage filled as soon as possible. However, the AN/FPS-14 and AN/FPS-18 gap-filler radars for the SAGE System would not be available until late 1956 and afterwards. *(The first unmanned gap-filler annex that would go on-line would be Gibbsboro, NJ, with an AN/FPS-14 in March 1957.)* So ADC then set up and operated temporary manned gap-filler radar stations at several locations where low-altitude coverage was deemed critical. Interestingly, these temporary sites were "gap fillers" in at least two ways: not only did they fill the gaps in low-level radar coverage, they also filled the gaps in time until the unmanned SAGE radars could be fielded. The manned gap-filler stations, as best as we have been able to determine, all used **AN/TPS-1D** ("Tippsy One Dog") search radars of World War II vintage that provided medium-range coverage. The AN/TPS-1D radars operated in the L-Band at a frequency between 1220 and 1280 MHz, with an effective range around 150 nautical miles. This same radar model had been employed at many earlier Lashup radar sites. The AN/TPS-1D were not reliable enough for unattended use; hence the need for the site manning.

Deployment began in 1955, and the manned gap fillers then were operational for roughly two years, 1956 - 1957. After that, each site was either converted to an unmanned gap-filler annex, replaced by an unmanned gap-filler annex nearby, or simply closed altogether. One example of a site converted is seen in **Figure 1**; this photo shows both the Rye AFS, NH manned gap filler (cantonment area) and its replacement unmanned gap filler (renamed Fort Dearborn). A second example is shown in **Figure 2**; that photo, a recent shot, shows the original manned gap-filler radar operations building re-used as the unmanned gap-filler radar building. The following is a list of manned gap-filler radar station with relevant information as available (note that all carried "mobile site" designations):

Table 1. Locations of "Manned Gap-Filler" Radar Stations (AN/TPS-1D Radars)

Original Site Designation	"Manned Gap-Filler" Radar Station	Assigned AC&W Squadron	Replaced by	New Site Designation	GFA Radar Type
M-101	Rochester AFS, MN	808th	none *(closed)*	*none*	*none*
M-104	Rye AFS, NH	644th	Fort Dearborn GFA, NH (same location)	P-10B	AN/FPS-14
M-105	Alpena AFS, MI	677th	Alpena GFA, MI (same location)	P-34E	AN/FPS-18
M-106	Two Creeks AFS, WI	700th	Two Creeks GFA, WI (same location)	P-19B	AN/FPS-18
M-109	Grand Marais AFS, MI	906th	Grand Marais GFA, MI (new location)	P-66A	AN/FPS-18
M-122	Dallas Center AFS, IA	650th	Dallas Center GFA, IA (same location)	P-71D / P-81A	AN/FPS-18
M-131	Owingsville AFS, KY	809th	Owingsville GFA, KY (same location) *	P-82B	*none* *
SM-137	Carmi AFS, IL	704th	Carmi GFA, IL (same location?) **	P-70A	*none* **

** reportedly, never became active as GFA*
*** reportedly, GFA was never built*

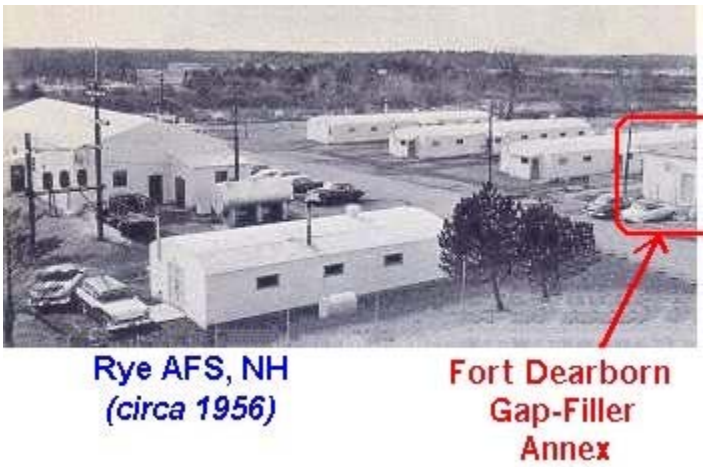

Figure 1. Manned and Unmanned Gap Fillers Side by Side at Fort Dearborn, Rye, NH

In this first example, the unmanned gap-filler radar equipment was housed in a new building using the standard design (**L**-shaped cinderblock building).

photo by Tim Tyler, 5-28-2002

Figure 2. Manned and Unmanned Gap Fillers Side by Side at Dallas Center, IA

In this second example, the unmanned gap-filler radar equipment was housed in the old Radar Operations building used for the original manned gap-filler facility.