Communications Receiver Facility. FAC: 1311

CATCODE: 131115
OPR: Air Force Flight Standards Agency (AFFSA)
OCR: AFNIC

1.1. **Description.** This facility consists of antennae for a communications receiver site only.

1.2. **Requirements Determination.**

1.2.1. **Very High Frequency/Ultra High Frequency** (VHF/UHF) Air Traffic Control (ATC) radio equipment is usually at one or two remote locations either on or off base. Transmitters may all be located on one site with receivers located at a second site, physically separate to minimize interference. They may also be collocated in one building at a single "transceiver" site. Collocated sites are to be used whenever possible. Primary Air Traffic Control (ATC) radio equipment may be remotely controlled using telephone keying and audio lines or small capacity microwave radio systems from the control tower, Radar Approach Control (RAPCON), etc. The transmitter-receiver site consists of a building, usually constructed of concrete masonry units, with appropriate interior accommodations for routing electrical, telephone, and equipment cables. Ports are provided in the building for entry/exit of power, telephone, and coaxial cables. The site is normally equipped with an emergency power generator located either in the building or in a nearby exterior building. The generator is usually diesel powered and activated manually or automatically upon primary power failure. The power generator room/outbuilding has special ventilation, electrical, fuel safety, and environmental considerations. Land immediately adjacent to the building is necessary for the installation of wooden poles or metal towers to support VHF/UHF antennas.

1.2.2. Physical security equipment required includes safety and emergency lighting, obstruction lighting, and controlled area signs as indicated in AFI 31-101. Work space may be required along with storage space for paint, flammable materials, and fuel tanks.

1.2.3. **High Frequency (HF) Point/Point and Ground/Air Sites.** Unlike VHF/UHF sites, which are closely tied to base ATC facilities (control tower, RAPCON, etc.), HF systems are often operated at the receiver or transmitter site or in a separate facility and may be remotely connected to the transmitter facility. Some HF radio stations are user-operated or operator-operated transceiver facilities in command posts or other on-base locations, and do not have specific radio facilities. Antennas are often located alongside base buildings or on rooftops and vary in nature. Some multi-HF transceiver sites may be operated locally (in conjunction with radio equipment) or remotely from another location. The size of the transceiver building and its associated antenna farm varies significantly based upon the number of radio levels involved, the mission of the station (point/point, air/ground, etc.), and azimuths of the antennas (or rotating antennas). Antennas should be located away from high tension power lines, metal fences (depending upon the type of antenna), and away from noise generating devices or machinery. Collocated (transceiver) HF sites are

considerably larger than the VHF/UHF sites, but the split site HF sites are the largest, and may be separated by up to 40 km (25 miles) to minimize electromagnetic interference between sites. Ensure associated buildings are able to accommodate large numbers of high power radio transmitters/receivers, emergency power source, maintenance, and supply areas.

1.3. **Determination.** The size of the antenna "farm" varies with the scope and complexity of air operations at each base, the character of the facility (i.e., a transmitter site only, a receiver site only, or a collocated transmitter/receiver site), and the technical complexity of the facility (quantity of radios, operating frequencies, use of duplexers, electromagnetic compatibility, etc.). Each facility is generally tailored to its specific mission, incorporating technical, functional, environmental, geographical, and local considerations.

1.4. **Dimensions.** Varies (see **paragraph 1.3**). For latest information and drawings, plans, utility, siting and electronic requirements, consult AFFSA.

1.5. **Design Considerations.** Consult the *Air Traffic Control Tower and Radar Approach Control Facility Design Guide.*