Assorted Army Acronyms and other Alphabet Soup of the 1950s and 1960s

Leonard H. Anderson

The main body of this text is a brochure prepared by the Signal Overseas Communications Battalion some time in 1962 or 1963. That and the two attached photographs are courtesy of Mr. James Brendage, a retired civilian engineer employed by the Department of the Army and later by the Department of the Air Force, who worked at both the ADA Transmitter sites in and outside of Tokyo, Japan. A gentleman, he kindly sent me copies of the articles digitized and reproduced here. I take no credit for making that brochure nor the photographs and have tried my best to digitize them for best clarity and preservation of detail.

There may be several reasons apparently behind the brochure's production and I will try to second-guess a bit. The first one might be for the centennial of the Signal Corps in March of 1963. Congress created the Signal Corps in 1863 but some Signal historians claim that the Corps began on June 21, 1860, when the first Signal Department was created within the Army, appointing a young Army surgeon, Major Albert Myer, as the first Signal Officer.[1] Regardless, the progress in all forms of communications had already exploded since the end of World War 2 now over for almost two decades. With success behind it and yet to come, Signalmen can be proud...justifiably despite the sometimes insufferable *we can do anything!* expressions that creep into military writing. At time of publishing there were plans already made to have USAF take over all administrative and operations control of the entire communications facility from the Army. About 1200 personnel of all ranks were to be *downsized* (to use a modern idiom). Some four decades ago this was somewhat traumatic to those oriented to an older esprit de corps within the Army. Be that as it may, here are some definitions:

DCS Defense Communications System, the all-branches conglomerate of which ACAN was a part.
ACAN Army Command and Administrative Network, Army-only pre-1960 HF communications web.
STARCOM Strategic ARmy COMmunications, an acronym that existed about a year between ACAN and the unification into DCS; same Army facilities worldwide as ACAN but the name looked *high-tech* then.
Drake A place referring to Camp Drake located NW of Tokyo. Divided by a highway, North Camp Drake had the more permanent Army area facilities; South Camp Drake had been a large Replacement Depot (*repple-depple)* during the active phase of the Korean War.
Relay Station Referring to a node in a communications network where messages (always in teleprinter mode) are transferred in order to reach the destination address always shown on the message preamble.
Torn-Tape Relay The pre-WW2 teleprinter method of literally tearing off paper teleprinter tape coming from a punching receiver mechanism (*chadless* or not-fully-punched-through) with printing of the message. Manual operations required an operator to carry the tape over to a *transmitting distributor* (automatic switch-over two-headed paper tape reader) which would route the message over another teleprinter circuit to eventually reach its destination. [sort of a human operator version of a telephone central office]
Primary Relay A large node in a network receiving and sending teleprinter messages from/to many other network locations. See routing diagram on page 5. Network nodes seldom originate messages (a task for *message centers* a la the old WW2 era organization); their task is to route messages.

[1] Not a fluke happening. Major Myer was medically interested in helping the deaf to communicate by any means and had investigated semaphore signaling as well as the *new* Morse-Vail Telegraph service begun in 1844. The collar insignia of today's Signalmen is from the original *wireless field communications* of semaphore by signal flags (daytime) with torches (nighttime). Visible light is EM radiation although well beyond the 300 GHz upper allocation limit, hence *wireless* is correct. :-)

Long-Haul Literally, a long distance path of communications, usually applied to HF radio circuits longer than 300 miles from a fixed point to another fixed point. Civilians know this by the familiar term *DX*.

Carrier Terminal Equipment The term *carrier* was coined first by the telephone infrastructure for long-distance service (*common carrier services*) and refers to electronic equipment that can compress several separate communications circuits, either voice or teleprinter, on a single wire or radio circuit.[2]

Overseas Switchboard At the beginning of the 1960s there existed only a few telephone voice circuits over long distances. Some were on undersea cable through commercial communications routes or they were on *SSB* radio voice channels. None were considered *secure* and use was restricted by military personnel.

SSB or **Single Sideband Radio** That follows the pre-WW2 commercial format with a 12 KHz wide AM single sideband, RF carrier suppressed, the 12 KHz sideband itself subdivided into four 3 KHz wide voice bandwidth circuits. Usually one voice channel was the *order-wire* for use by control supervisors, one voice channel available for overseas radiotelephone, the remaining 6 KHz occupied by *tones* of teleprinter signals. Carrier terminal equipment *multiplexed* up to 2 voice and 6 to 12 teleprinter circuits all on one radio circuit. Single-channel (single user) SSB radio did not become popular with maritime radio or radio amateurs until after WW2 and then limited to a bandwidth of 3 KHz maximum.

VIP Circuit One reserved for an area commander's use while in transit, usually by aircraft. Seldom used in practice, usually done by encrypted teleprinter for security reasons.

Encryption Encryption and decryption of messages was performed by a separate group of personnel, all having undergone more rigorous security screening prior to entering the service. Cryptologic method was by so-called *rotor* method which was, in effect, a constantly-changing *polyalphabetic substitution cipher*.[3] The end result, when monitored by a standard, unencrypted teleprinter, was garbled characters, quite unreadable. Old-style five-letter code groups sent by manual morse code was not used by the Army in the 1950s and 1960s. Indeed, morse code mode itself was available for field radio units but seldom actually used in practice from the start of the Korean War in 1950.

Battalion An Army designation for a group. A basic unit in the Army is the *squad* of 12, all enlisted rankings. Four squads usually made up one *Company*, commanded by a lieutenant. Four companies usually made up a *battalion*, led by a major to a colonel. This continued by fours through Regiment, Division, then Corps. Actual numbers of personnel varied by their specialties and assigned mission. A single battalion could be a specialist unit such as in Signal as was the 8235th Army Unit that manned station ADA and produced he attached brochure[4]

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[2] Not to be confused with a Radio Frequency (RF) *carrier* component of a radio signal. *Carrier* in communications parlance derives from *common carrier services*, the fancy name for telephone long-distance service. The first Single Sideband (SSB) circuits were on wire lines, not on radio, circa 1920s, where four telephone voice circuits could be carried over a single open-wire telephone line. Considering tens and hundreds of miles of wire and support poles cost the telephone companies considerable money to install and maintain, some electronic trickery was a godsend to them.

[3] The method is explained better in David Kahn's best-seller of the 1960s, *Codebreakers, A History of Cryptology*. The military standard cryptologic method of the 50s and 60s was a derivative of the late-WW2 modified teleprinter sometimes called the *SIGABA*. The capture of the USS Pueblo and its secure communications equipment by North Koreans in 1968 forced a drastic change in equipment and procedures of crypto methods.

[4] The organizational arrangement in the military seems to hold to a hodge-podge of tradition and trying to modernize. An *Army Unit* or *AU* was a numeric designator that seldom changed, but its formal full name could change rapidly. In 1962 the 8235th AU was titled *Signal Overseas Communications Battalion* but prior to that it was *Far East Communications Battalion* since 1953 but before that being just *71st Signal Service Battalion.*

Some Remarks on Equipment Photographed in the Brochure

Page 11, bottom photo: At left, in a corner, is *Frequency Standards* at Receivers, that little part always on the TTY order-wire loop of Control and Transmitters. It appears to be the old General Radio commercial standard frequency unit used in 1955. An exception is the R-390 receiver in front of the operator. A guess is that Transmitters had better, integral frequency sources in all transmitters and no longer needed *Standard's* help during QSYs in 1962. In 1955 multicouplers and coaxial patch panels were scattered around Receivers, not as centralized as shown here. Note the 10-inch reel tape recorder in the near top position of a left-hand rack. Use unknown, nothing similar noted in 1955.

Page 12, bottom left photo: A rotatable log-periodic antenna! Something new and rather revolutionary to old-time Signalmen used to pre-WW2 techniques.

Page 14, bottom left photo: AN/FRC-35 (left hand rack set) appears to be another version of the General Electric commercial microwave radio relay equipment. The two to the right appear to be AN/FRC-23, an earlier GE commercial microwave multi-channel terminal. The FRC-23s were so ennobled by metal foil equipment labels attached to each rack door (apparently all removed in the photo). As being one of the *Gluing and Applying Team* who also supervised operations and maintenance of them, I have to admit this was the first - and easiest - task of *militarizing* any piece of electronics in my entire career. :-) Those terminals remained just *GE* to us that kept them working.

Page 14, bottom right photo: The Lincoln F9C description is hard to come by now. Apparently this was an Army experiment into the first uses of some kind of spread-spectrum modulation mode. Such didn't exist in 1955 and may not have lasted long after 1962. Unknown. More information would be nice to satisfy a curiosity.

Page 15, bottom right photo: A larger version of this photograph is available as the second of two attached photos at the back of this document.

Page 15, top photo: The title of *KV-14B Telegraph Distortion Monitor* applies to teleprinter equipment, not manual morse code mode. Teleprinters were lumped under the overall *telegraph* equipment grouping well into the 1970s. Note the rack slides for the chassis enabling the out-position to tilt the chassis over for servicing; an innovation in hardware just coming into being in electronics in 1955.

By the 1960s, nearly all radio and wireline communications equipment had some kind of *AN/* designation. Gone were the old pre-WW2 *BC* and *SCR* labels/identifiers. Much of the post-war equipment in fixed communications positions was commercial, off-the-shelf. It wasn't called *COTS* then (a buzzword acronym born in the late 1980s).

Enjoy,

Leonard H. Anderson 13 March 2005

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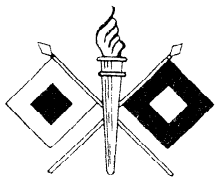
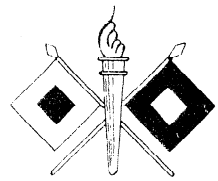




DCS

PRIMARY RELAY STATION

DRAKE, JAPAN

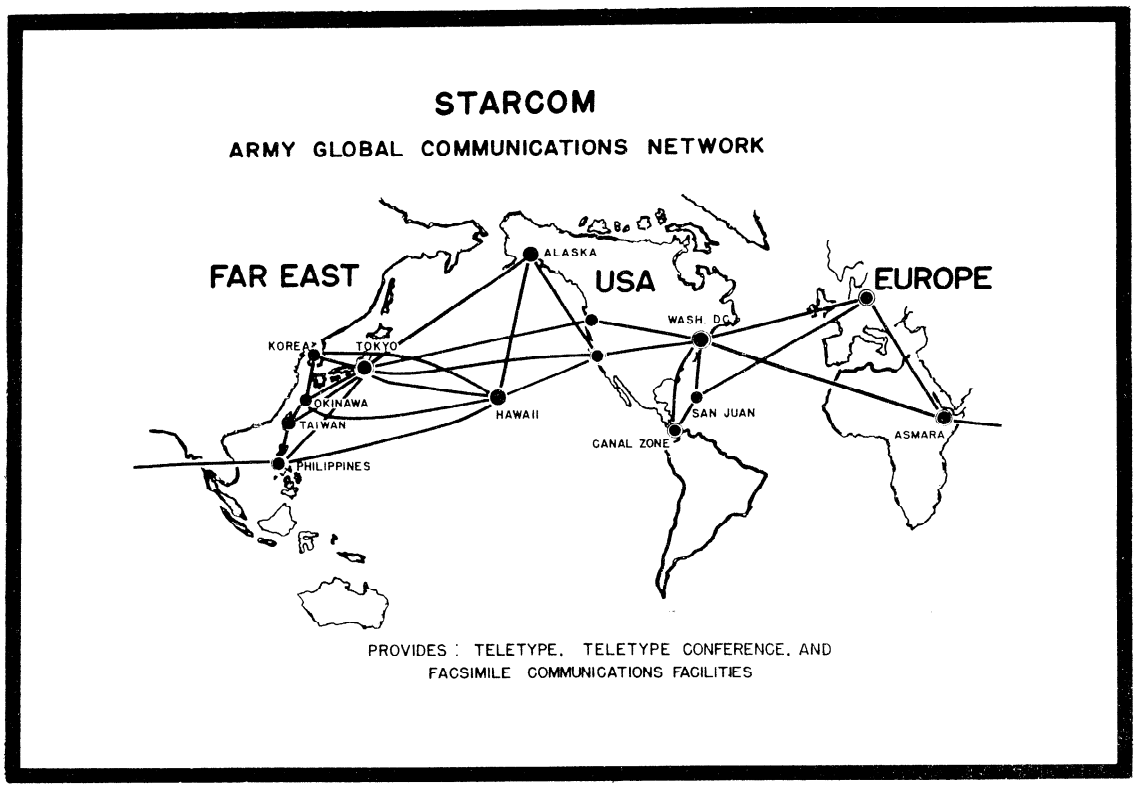
Mount Fuji, or Fujiyama as it is known worldwide, is located 60 miles west of Tokyo, Japan. Serene, majestic, snowcapped most of the year, Mount Fuji is a symbol of the Land of the Rising Sun. It is also a symbol to the personnel of the United States Army, Japan, for the Mount Fuji image graces the USARJ shoulder emblem.

FOREWORD

The personnel of the Drake DCS Facility can be justifiably proud of the short but colorful history of this station with its setting in the exotic Far East. In meeting the crises encountered during the Occupation period, the Korean War, and the post-war world conditions, the Facility personnel have proven time and again their ability to meet the demands of any occasion. The Drake DCS personnel have contributed their share in making this station the largest and the most efficient overseas facility within the Army World-wide Communications System. It is to these men and women of DCS station Drake that this brochure is respectfully dedicated.

MISSION

The Primary mission of the Drake DCS Primary Relay Station is to provide overseas communication within the global Strategic Army Communications System for all military services, in support of requirements of the Joint Chiefs of Staff, Defense Communications Agency, Department of the Army, Commander-in-Chief, Pacific, U. S. Army, Pacific, Eighth U. S. Army, and U. S. Army, Japan, to all services having allocated channels in the network; to install, operate and maintain the Drake DCS Primary Relay Station with affiliated radio transmitting and receiving sites, keying facilities, terminal facilities, control facilities, and to provide special communications facilities as directed.



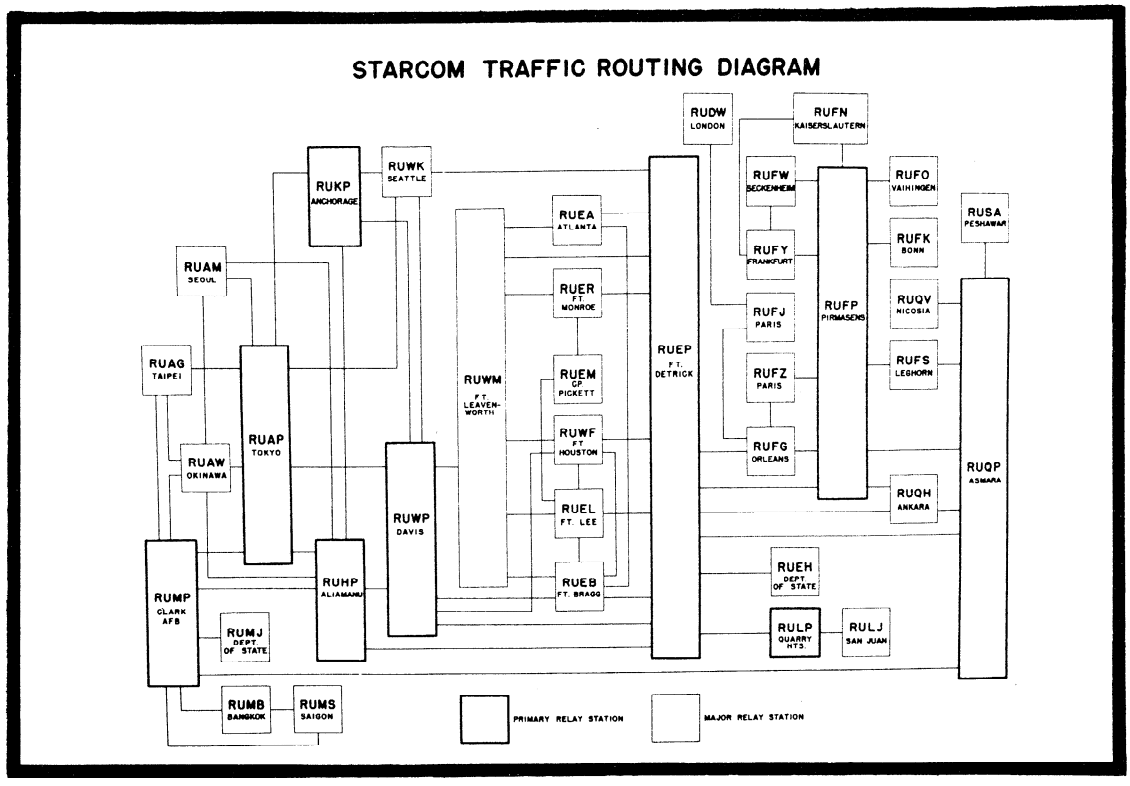
Global network of the Army component of the DCS.

INTRODUCTION

The present worldwide communications system employed by the Joint Chiefs of Staff and the Department of Defense to maintain communication with every theater and major command consists of radio and wire circuits of the military services and leased commercial circuits. The forerunner of this global system was established by the U. S. Army Signal Corps prior to World War II and consisted of single channel radio circuits between the War Department (WAR) and the nine corps areas within the continental United States, Hawaii, Panama, and the Philippines. The worldwide deployment of troops during World War II necessitated the expansion of this system, both in scope and in the capacity of the individual circuits. This expansion ultimately evolved into the extensive global Army communication network designated as STARCOM in 1960.

STARCOM (Strategic Army Communications) consisted of a series of worldwide strategically located relay stations interconnected by long haul radio multichannel and voice circuits. It employed the latest communications techniques including Ionospheric and Troposheric Scatter modes. The Drake STARCOM Facility was one of nine Primary Relay Stations in the worldwide STARCOM network.

The worldwide STARCOM network was integrated into the Defense Communication System and came under the operational control of the Defense Communications Agency of the DCS in March 1961. On this date the Drake STARCOM Facility became the Army component of the DCS in Japan.

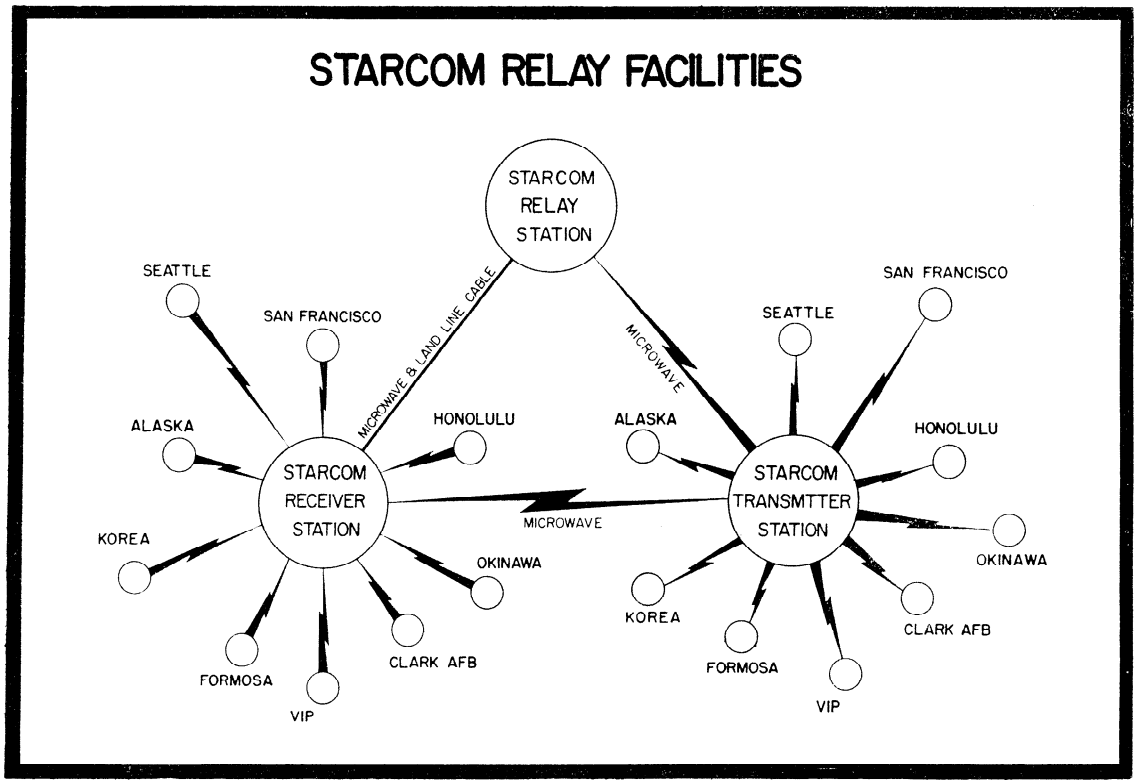


Routing diagram of the Army component of the DCS.

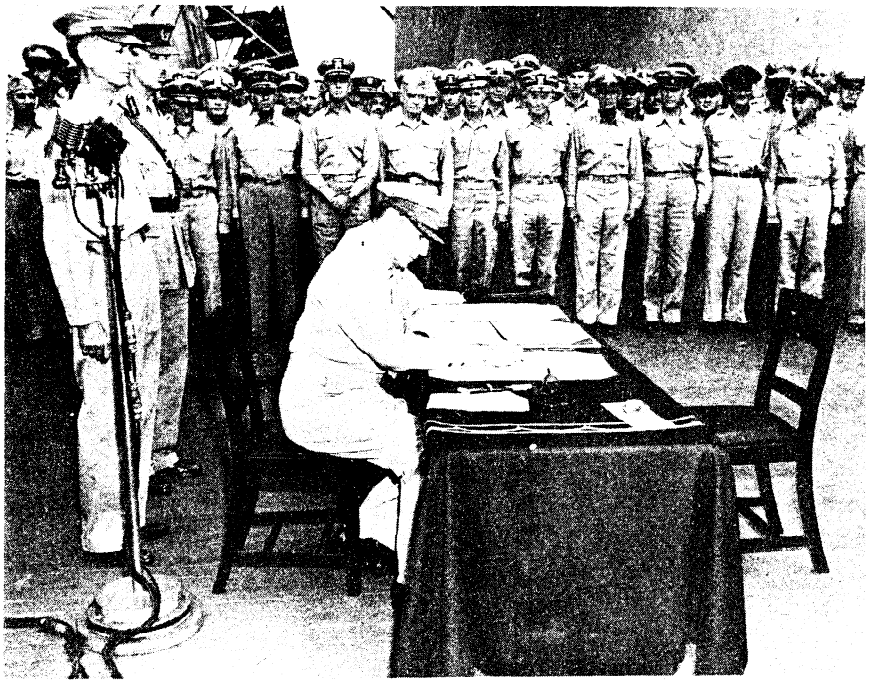
The main function of a Primary Relay Station is to "relay" traffic from one area or command through its facilities to another relay station, either for further relaying or to its ultimate local destination. Thus, a message originating in a San Francisco command for the Philippines (see figure above) could be "relayed" either through Hawaii or through Tokyo to the Philippines. The Drake DCS Relay Station is a vital link in the global network due to its strategic location in the Far East.

ORGANIZATION

The Drake DCS Facility consists of a Relay Station, Receiver Station, and Transmitter Station. The three stations are interconnected by cable and/or Microwave systems, and are located on the periphery of the metropolitan Tokyo area. The Relay Station is located in Building 898, North Camp Drake, and the Receiver and Transmitter Stations are separated from the Relay Station by approximately 5 and 15 miles respectively.



Configuration of the Drake DCS Facility, Japan



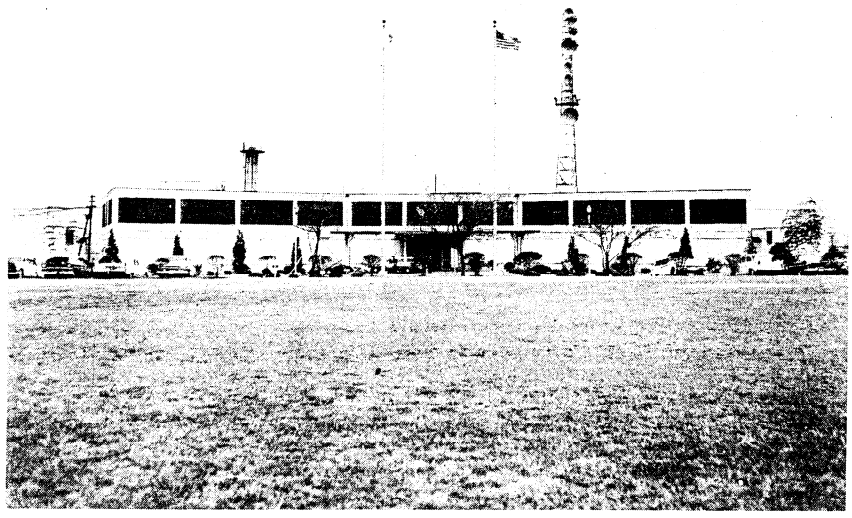
General Douglas MacArthur signing the Japanese surrender documents aboard the USS Missouri for the Allied Powers. Generals Wainwright (US) and Percival (UK), left, look on.

HISTORY

In mid 1945, a unit was formed from elements of two Signal Corps companies to meet the communications requirements for Operation OLYMPIC, the proposed all-out offensive against the Japanese mainland. World War II ended before operation OLYMPIC was initiated, however this new unit did provide radio communications from special ships in Tokyo Harbor which broadcast the surrender ceremonial aboard the U. S. S. Missouri. The 71st Signal Service Battalion was formed in April 1946 with men from the composite unit as a nucleus.

North Korea invaded South Korea on 25 June 1950. The next day, elements from the 71st Signal Service Battalion were in Korea reestablishing communications which were completely disrupted. The first Purple Heart medal of the Korean War was awarded to a signalman from the 71st wounded during a strafing attack. Three days later, 17 men from the 71st lost their lives in a plane crash and became the first Americans killed in the Korean War. The former Hardy Barracks in Tokyo and the Camp Tomlinson Transmitter Site were named for two of the 17 casualties. The 71st Signal Service Battalion was active throughout the Korean War providing and training teams of communicators for U. S. Forces in Korea, as well as meeting the ever-increasing communications requirements which nearly tripled the pre-Korea War level. The 71st was twice awarded the Meritorious Unit Citation for exceptionally meritorious conduct in support of military operations in Korea.

The 71st Signal Service Battalion was redesignated many times from 1946 to the present. It became the Far East Signal Service Battalion in 1953, the Signal Overseas Communication Battalion in 1955, ACAN (Army Command & Administrative Network) facility in 1958, and STARCOM Facility in 1960. The facilities of this organization have been modernized and expanded in step with its broadened mission and circuit requirements.

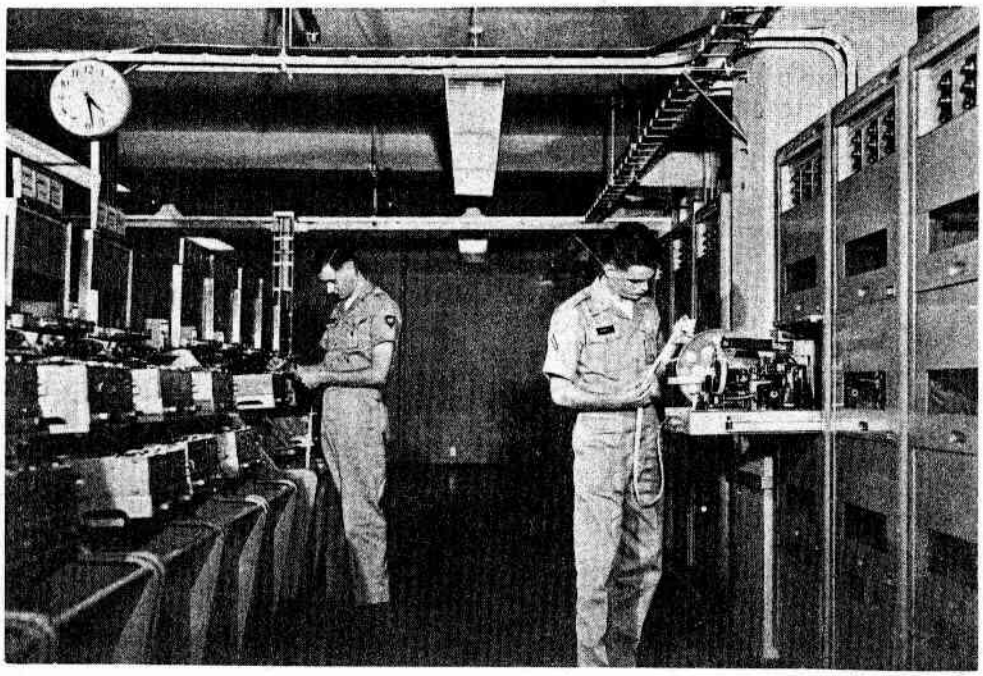


DCS Relay Station, Building 898 North Camp Drake.

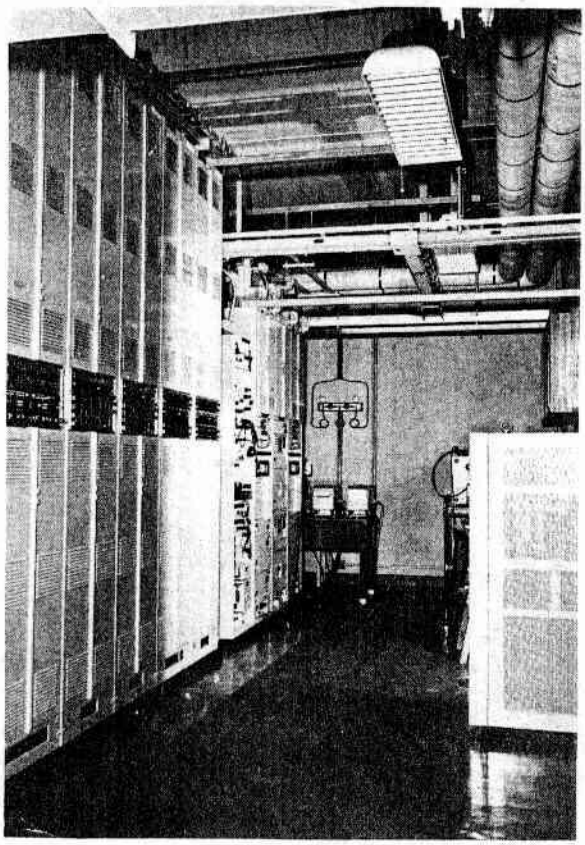
The DCS Relay Station, Building 898, North Camp Drake, is a torn-tape relay facility and is located approximately 15 miles from central Tokyo. This station is the heart of the Drake DCS Facility, and the cable and Microwave circuits from the Receiver and Transmitter Stations, Air Force and Navy facilities, and HQ U. S. Army Japan, are terminated at this station.

Building 898 was rehabilitated in 1961. The communications equipment includes torn-tape teletypewriter relay and encryption equipment, carrier terminal equipment, the High Speed Data System, Overseas Switchboard, and Facilities Control.

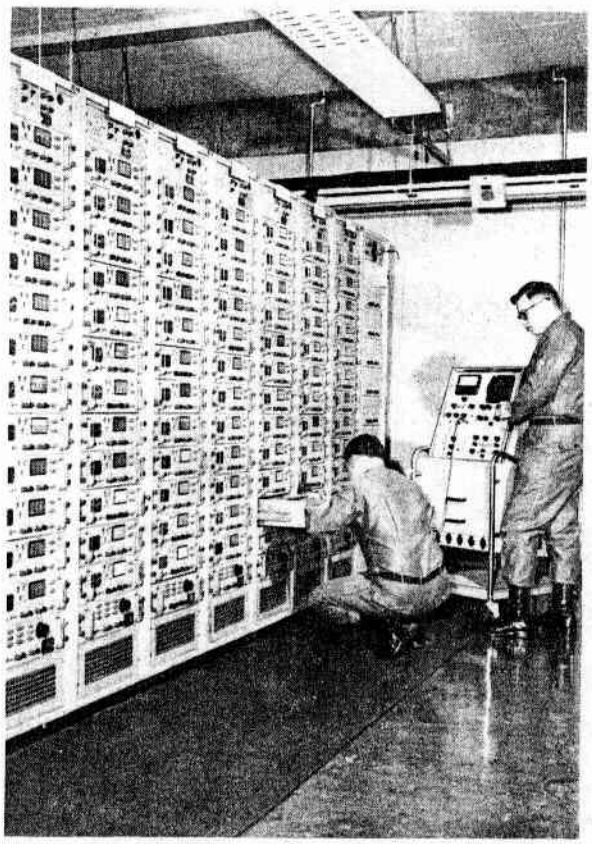
Personnel operating the Control Console, Facilities Control Section.



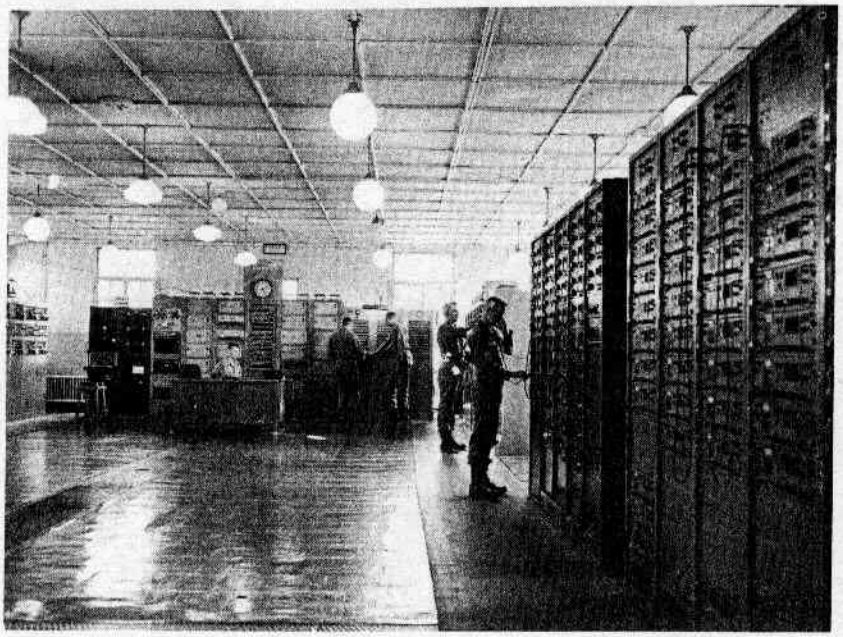
AN/FGC-38X equipment, Relay Terminal Section.



60-Channel Tropo-Scatter
equipment, Microwave Section.

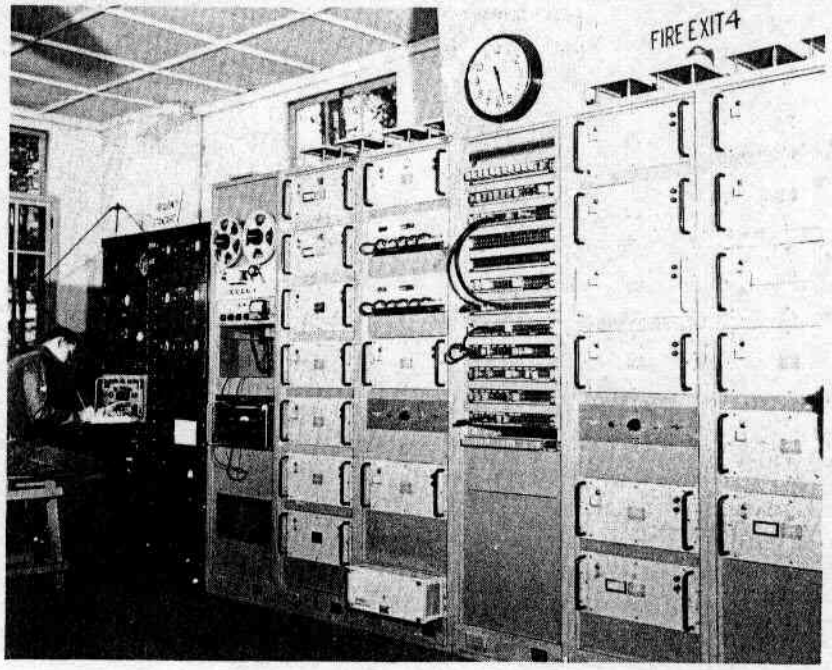


AN/FCC-3 Carrier Terminal
equipment, Carrier Terminal Section.

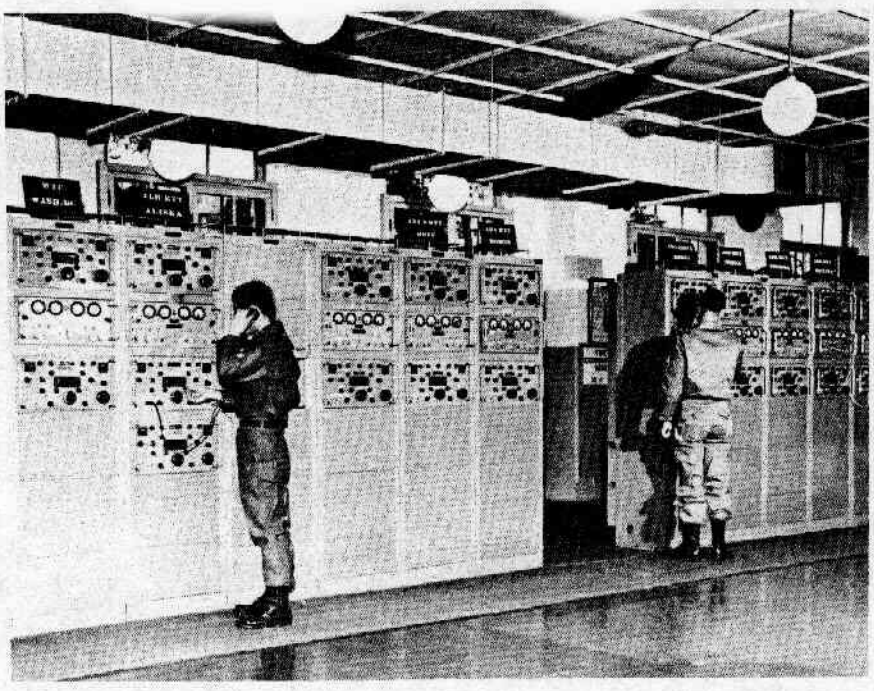


Receiver Operations Room, Camp Owada DCS Receiver Site.

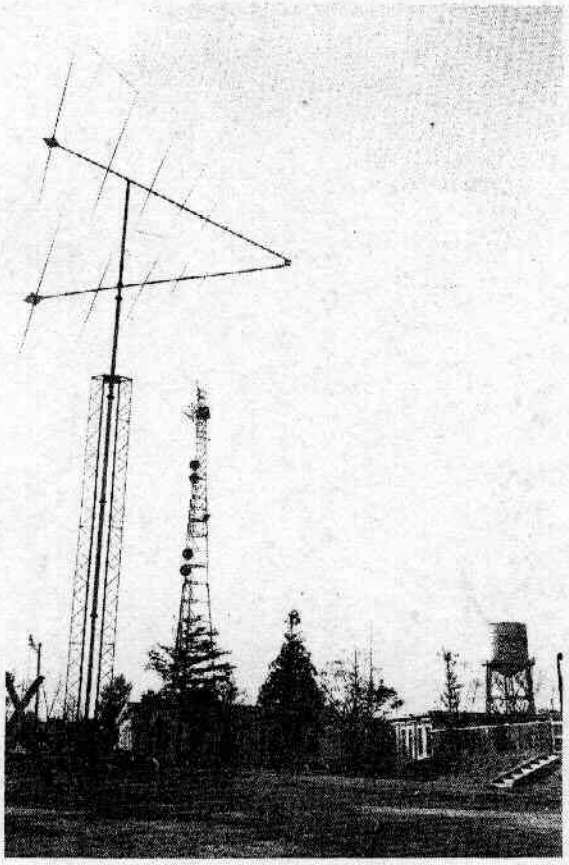
The Army Operated Receiver Site, known as Camp Owada, is located in Saitama Prefecture approximately 14 miles from central Tokyo and 23 miles from the STARCOM Transmitter Site. This station is a complete post with messing, barracks, and recreational facilities. The U. S. Air Force Receiver Facility is also located in Camp Owada under a Host-Tenant Agreement, and their long haul and air-to-ground receiving equipment occupy a portion of the Operations Building. The antenna field, covering approximately 324 acres, consists of farm land owned by tenant farmers and forest reserve areas owned by the Japanese government. The Administrative Agreement established between the governments of the United States and Japan governs the procedures for coordination between Camp Owada and the tenant farmers.



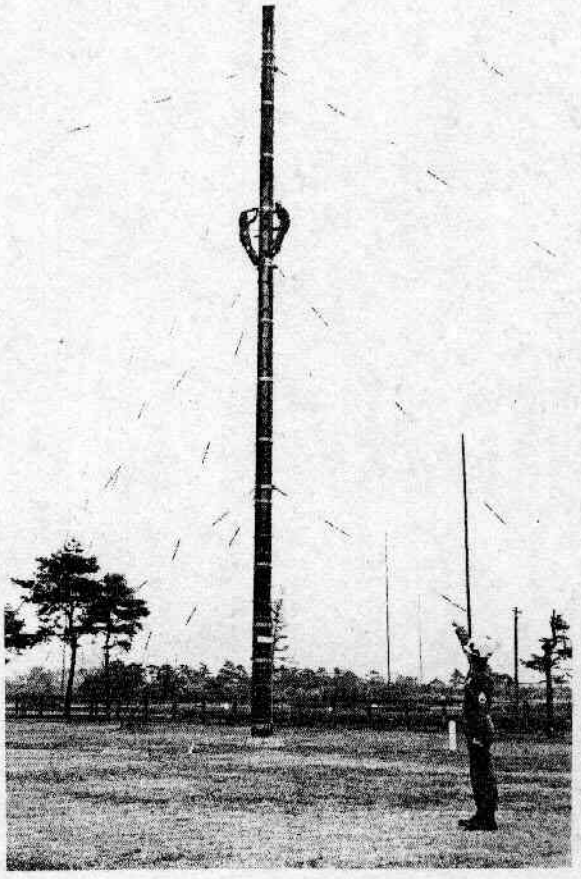
Antenna Patch Panel, Antenna Multicouplers, and Frequency Standard.



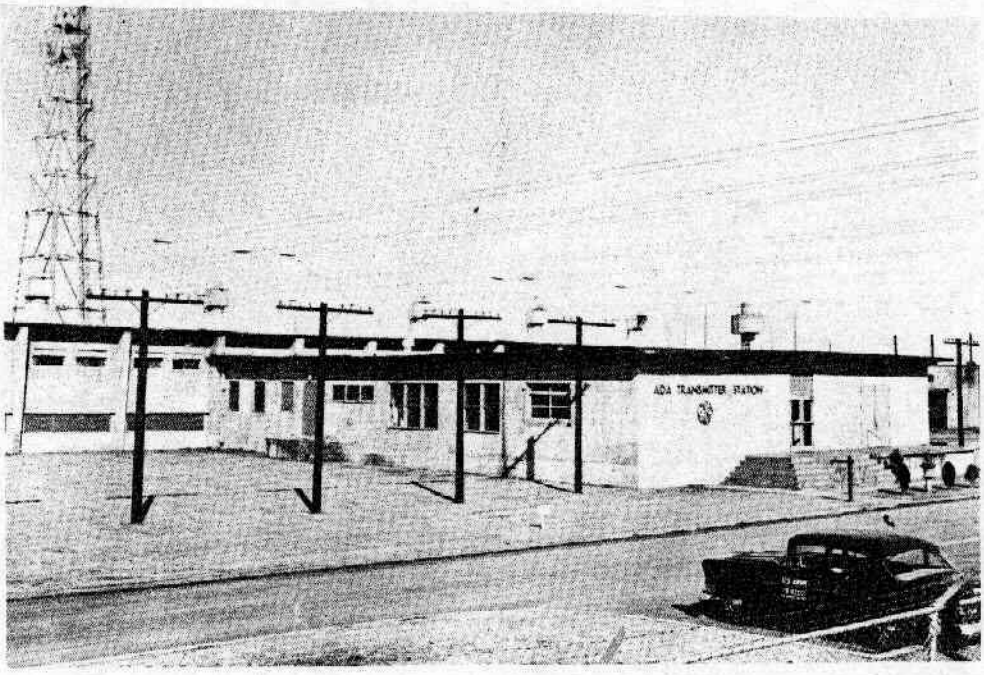
AN/FRR-38 equipment, Receiver Operations Room.



Collins Log Periodic Antenna. Microwave tower in the background.



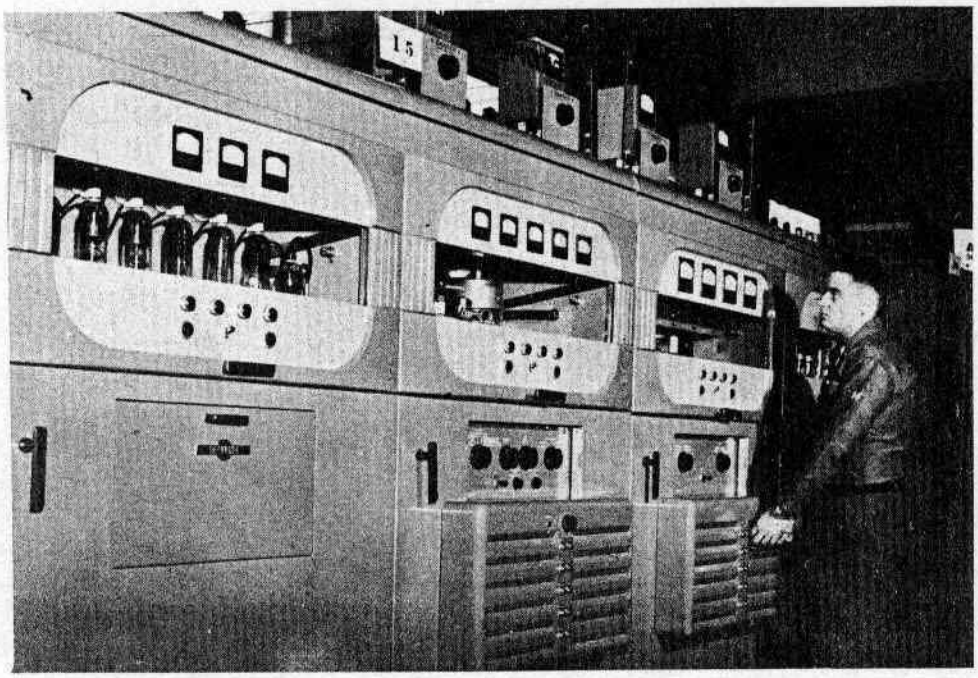
Hexapole Antenna pole, mounted on concrete base and showing steel band and guying support details.



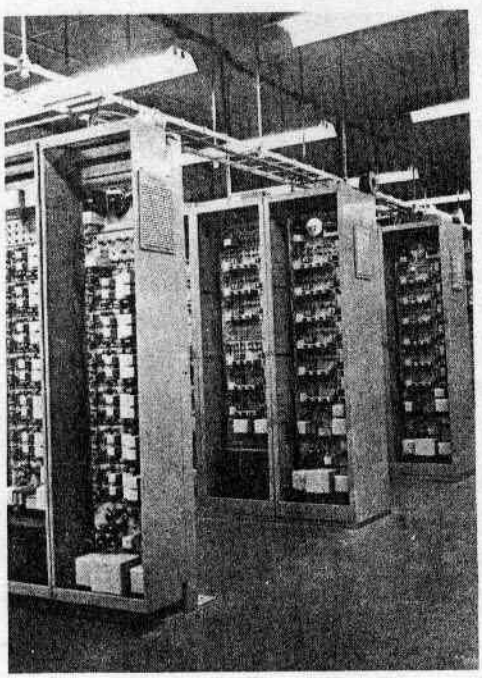
DCS Transmitter Station, Camp Tomlinson.

The Army Operated Transmitter Site, known as Camp Tomlinson, is located approximately 18 miles northeast of central Tokyo. Like Camp Owada, Camp Tomlinson is a complete post with messing, barracks, and recreational facilities. The antenna field covers approximately 403 acres and, like the Receiver antenna field at Owada, is owned by farmers and the Japanese government and comes under the same U.S.-Japan Administrative Agreement.

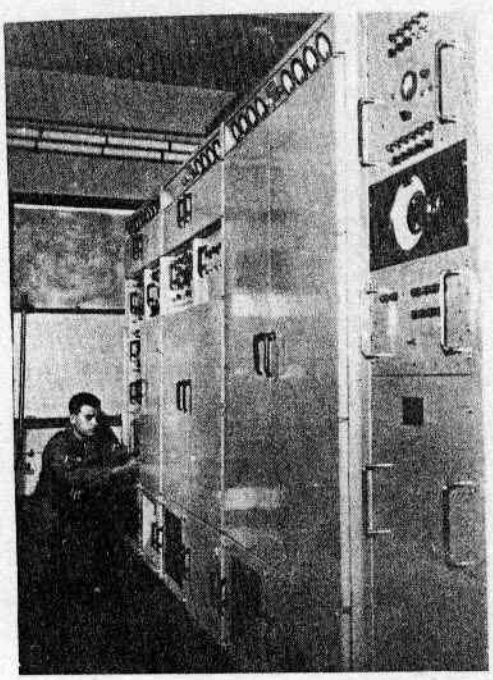
Transmitter Operations Room, Camp Tomlinson.



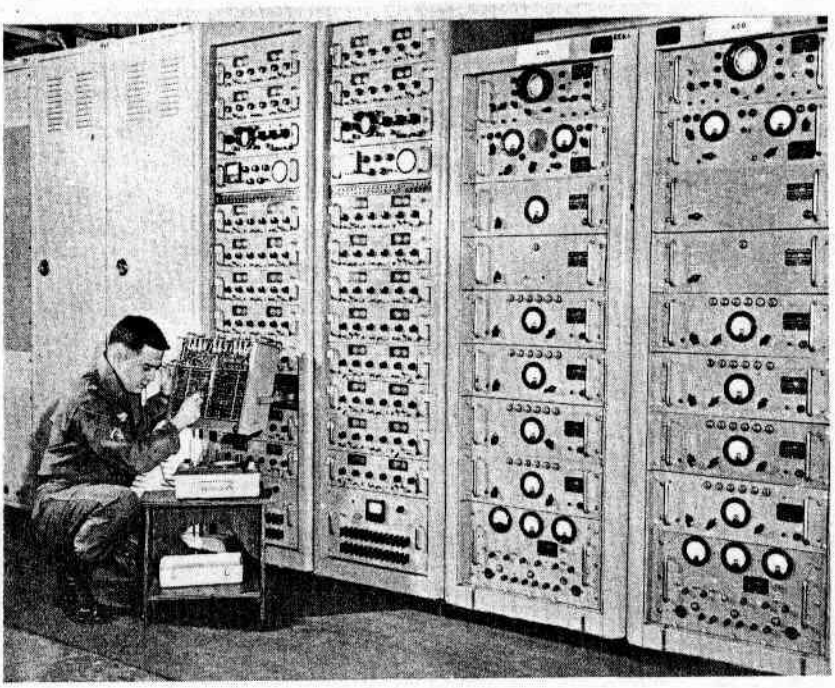
AN/FRT-22 High Power Transmitter in operation.



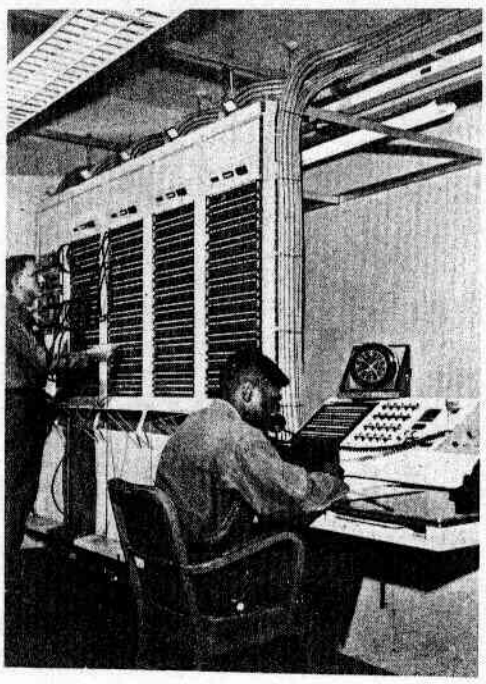
AN/FRC-35 Microwave equipment, Camp Tomlinson.



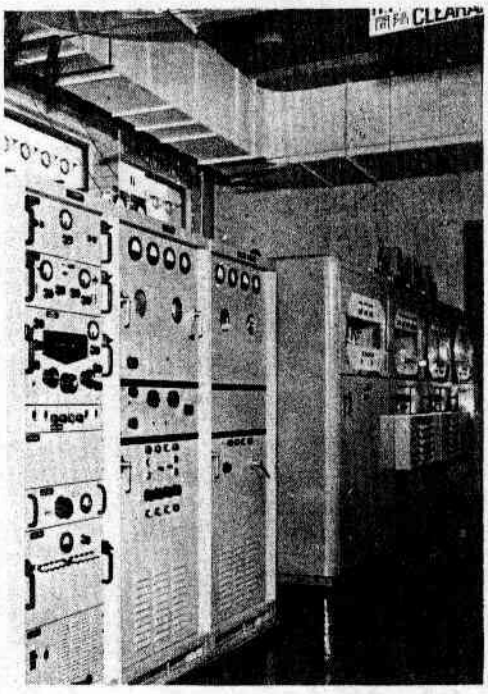
Lincoln F9C-A Transmitter Terminal, Camp Tomlinscn.



KV-14B Telegraph Distortion Monitor and AN/FGC-5.



Special Equipment Panels and Console, Relay Station.

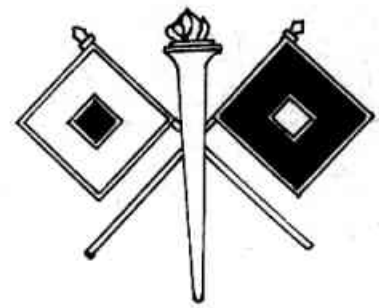


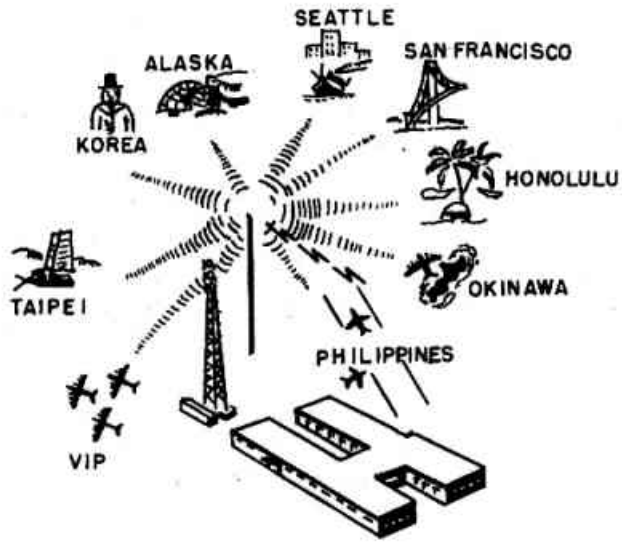
AN/FRT-51 and AN/FRT-22 Sideband Transmitters, Camp Tomlinson.

SUMMARY

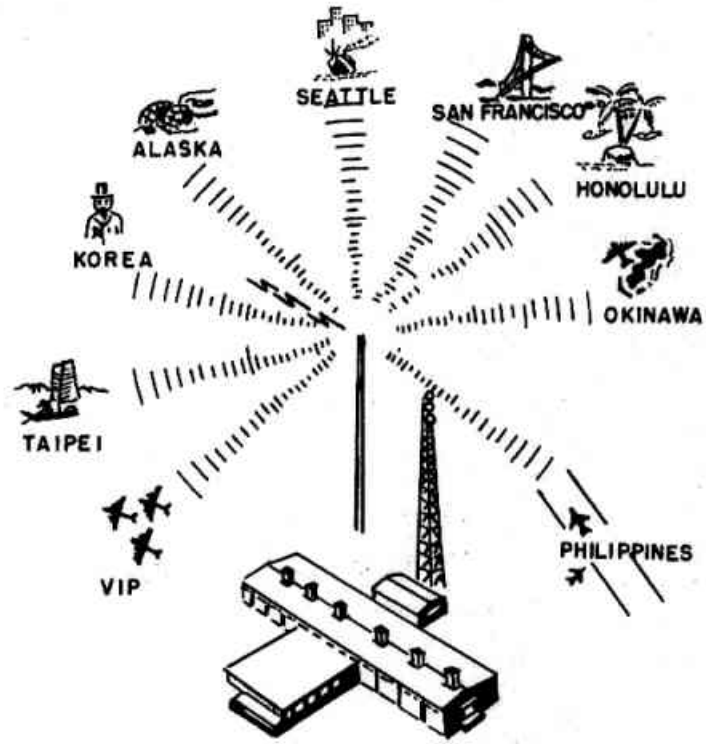
This Facility has come a long way from its birth as a tactical communications unit in the last days of World War II to its present size and its vital role in the global communications network. It has seen many changes in operational concepts, commands, and in equipment. But it has always strived, with outstanding results, to meet all requirements-be they additional circuits, or emergencies such as Korea in 1950. The army communicator is ever on the alert to improve operations and to meet all changes as they arise. He is dedicated to, and follows to the letter, the motto of the Signal Corps:

GET THE MESSAGE THROUGH

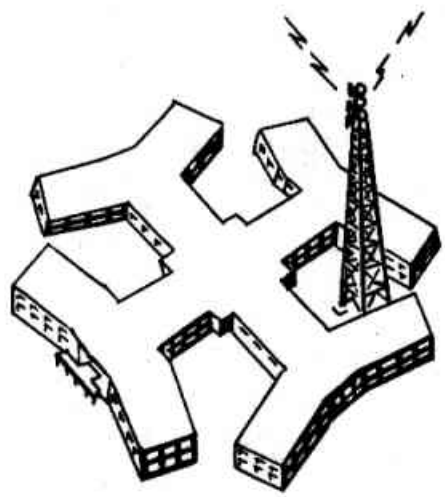




RECEIVERS



TRANSMITTERS



RELAY

Two Additional Photos Not a Part of the *DCS Drake* Document
Included for General Interest in Transmitters

Credit: Signal Corps photographs of October 1961 by SP5 Harold P. Slate, taken at the Camp Tomlinson Transmitter Site of Army station ADA, Kashiwa, Japan

Photo 1: According to the photo caption mimeoed on the photo back side, "A. B. Rineold performing operations at the Operations Control Console." In all likelihood this is a posed photograph, but Rineold is holding the handset of the order-wire telephone to Control (*Relay* in the DCS Drake document) and may actually be doing something besides posing. The Console appears to have been made larger than originally built back in 1954. The three jack fields in the middle handle TTY loops and audio lines from Control to various transmitter inputs around the station, much the same as at the original transmitter site at Tsukishima Island in Tokyo. Not shown (out of photo, either left or right) is the TTY set for the command order-wire that both directs all transmitter circuits and serves as a written log of changes. On the right wing of the console there appears to be a Hewlett-Packard 524 series frequency counter (model not quite discernable at this angle), quite probably used for local transmitter frequency monitoring. That was a new instrument in 1961 and the readouts are individual numbers for each digit arranged in a vertical row (sometimes referred to as a *thermometer* style display). At extreme right is an ordinary manual typewriter for utilitarian uses. The oscilloscope behind Rineold's left shoulder is apparently one of the Tectronix 511AD scopes that was packed with the microwave radio relay equipment (one per terminal!) when they arrived in 1954. The OIC (Officer In Charge) of transmitters decreed that transmitter work needed at least two of the four in the main building, leaving two in the relay building (detached from main structure). Equitable arrangement.

Photo 2: AN/FRT-51 on the left, a 5 KW all-mode HF transmitter (4 KW PEP in 12 KHz band-width SSB), one of the newer models at the time. AN/FRT-22 on the right, 40 KW, another all-mode HF transmitter with its own exciter and with preset tuning for 10 frequencies, servo controlled. By 1961 the original separate frequency keying exciters (O-5FR) appear to be gone as the newer transmitters all have integral frequency sources and modulators. Note the combination windows and supports for the glass bowl insulators for 600 Ohm open-wire feedlines. The square ducting in the ceiling is just for air cooling, not some Dew-Line-like waveguide. The floor is quite shiny, apparently due to 7 years of Army life when there isn't enough busy work. The FRT-51 was not available in 1954 when the Kashiwa site began installing transmitter equipment. The FRT-22 was used as a power amplifier for the 4 KW PEP output of the Western Electric LD-T2 commercial grade SSB transmitters. Anecdotal note: When four new LD-T2 transmitters were delivered to Kashiwa in late 1954, still in their wooden shipping crates, the Japanese delivery contractor had placed them on the truck *upside down*. Two of those suffered structural damage to their tops, breaking several of the many large analog meter readouts along their top edge. I did not learn anything of the damage resolution, only that the four were repaired and put into 24/7 operation, serving well for several years.

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