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Project JENNY - The Navy's Blue Eagle Television Network

LCDR C. R. Smith, USN
LTJG R. A. Rollins, USN

Oceanographic Air Survey Unit
NAS, Patuxent River

The mission of Project JENNY is to broadcast radio and television from an airborne platform. The project had its beginnings as far back as 1962 when radio and television equipment was installed in two C=118 aircraft for possible use during the Cuban crisis. In 1965, the Joint Chiefs of Staff directed that these aircraft be replaced with C-121 Super Constellations. Such a change would greatly increase time on station, provide greater flexibility, and increase power and capability. The Oceanographic Air Survey Unit, which was operating C-121 type aircraft at the Naval Air Station, Patuxent River, Maryland, was selected as the parent squadron to command Project JENNY, Technical control is under the Chief of Naval Operations.

Work was begun on the first aircraft, called Blue Eagle One, in May 1965. The plane, a transport configured C-121 in service with the Navy since 1953, was reconfigured as a high power (total output of about 32,000 watts) communications and radio relay station.

Installation and testing was completed during the summer of 1965. In October, Blue Eagle One was deployed on one day's notice, to South Vietnam to broadcast the baseball World Series and the Army-Navy game to American servicemen in Vietnam and in the Pacific by relayed AM and short wave radio. The purpose of the mission, in addition to improving the morale of the servicemen, was to test the system under operational conditions and to evaluate its effectiveness. The term of deployment was to be two weeks, but the system was so popular and effective, that it was extended an additional seven weeks. In December, having proven the feasibility and value of the system, Blue Eagle One returned to the United States for overhaul.

Meanwhile, it was realized that television in an area such as Vietnam would contribute greatly to morale. The Navy, through Project JENNY, was assigned responsibility for providing airborne TV coverage until permanent television stations could be constructed and installed. A two-channel system was to be provided, with U.S. programming on one channel and Vietnamese on the other.

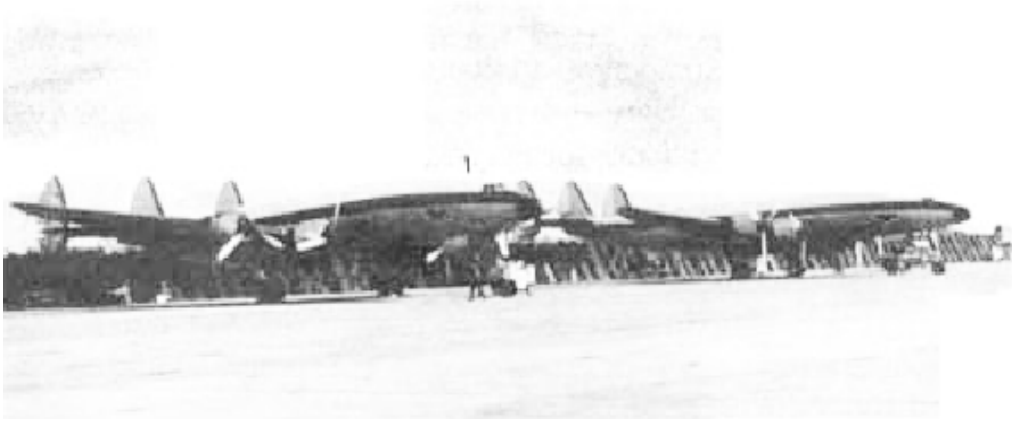
Blue Eagles Two and Three, also Super Constellations on duty with the Navy since 1953, arrived at Andrews Air Force Base on August 25, to be con-

figured as television, radio and communications platforms. The work was done by a group of Naval officers, aviation electronic technicians and mechanics, submarine and surface electronic technicians and civilian technical representations who did a remarkable job of piecing together the various system. Equipment of a fantastic variety of uses and origins was collected and modified for use on aircraft. Most of it was too heavy and had to be cut down, redesigned and rewired. Some of it ws used, some already on the stock shelves—results in the substantial savings cost and time to the government. By January 1966, the job was completed and the two aircraft were ready for deployment to South Vietnam.

On January 3, an advance party of four officers and 21 enlisted men arrived at Tan Son Nhut Air Base, Saigon to prepare an operating base for Project JENNY, West Pacific. No working space had been assigned, so the party selected an area between two lines of aircraft and set up headquarters with two tents, scrap lumber, shipping crates and CONEX boxes. The Base provided furniture for their tents and three pickup trucks for transportation.

Blue Eagle One, its overhaul completed, arrived at Tan Son Nhut on January 7, and began to broadcast short wave radio. Blue Eagle Two arrived on January 15 and began a series of test and evaluation flights preparatory to commencing regular television broadcasts. Blue Eagle Three arrived six days later, January 21, and testing continued. The first television program, with speeches by Premier Ky, Ambassador Lodge, and General Westmoreland, was taped in the airport terminal. Cables connected the cameras in the terminal with the recording equipment in Blue Eagle Three.

On February 7, 1966, regular television broadcasting began. The schedule that was arranged called for one hour of Vietnamese programming on channel nine starting at 7:30 p.m. and three hours of U.S. programming on channel 11 starting at 8:00 p.m., seven days a week. Broadcast time was limited, especially on channel nine, because of the short supply of material



Project JENNY television aircraft Blue Eagles II and III
On station at Tan Son Nhut Air Base, Saigon.

LCDR Chester R. Smith, Electronics Officer, Project JENNY, WestPac (seen at right) and Bruce P. Paret, ETN2 monitor the transmitted signal at the video switching console.

available. A normal on-station site was established 15 miles southeast of Saigon where the aircraft flew in a tight circle at 10,500 feet. This predetermined location allowed viewers with a 50-mile radius to train their antennas in a fixed position for optimum viewing. Blue Eagles Two and Three alternated night broadcasts.

To make sure that a large number of the populace could view the broadcasts, the U.S. Agency for International Development (USAID) provided 500 TV sets to Vietnam. These sets were installed in public squares, in store windows, or other places where a large number of people could watch the program. And watch them they did. When the Vietnamese programs, which ranged from instruction on new agricultural methods to folk dancing and variety shows were over, the Vietnamese people turned the sets of channel 11 and watched “Bonanza” and “The Danny Kaye Show.”

TV viewing became so popular that sets began to appear in downtown Saigon shops. Over16,000 sets were sold to service personnel in Post Exchanges through the Saigon Area. USAID promised to deliver more sets for community viewing.

Within a short time, the television broadcasting had settled into an operating routine. Problems of a routine nature arose and sere settled in the same fashion. In early April, the Department of Defense authorized a fourth

plane for the Blue Eagle Television Network.

On April 12, a Viet Cong mortar attack was made on the Tan Son Nhut Air Base. All three planes were hit and three men were slightly injured. Blue Eagle One, although it needed two propeller changes and suffered several fragment punctures in the wings and fuselage, was back on station in four days. Blue Eagle Three had only a few minor punctures and was able to keep its assignment the next day. Blue Eagle Two, however, took two direct hits—one in the tail and one if the top of the fuselage. There were hundreds of fragment punctures and two propellers were badly damaged. Yet, althou8gh many newspaper accounts declared that Blue Eagle Two was completely demolished, maintenance personnel, through long hours and exceptional devotion to duty, completed repairs by May 8—only 25 days after the attack. The plane again took to the air and resumed flying operational television broadcasts.

In late summer, as the Vietnamese elections for a constituent assembly drew near, the Vietnamese government required Project JENNY to provide additional television programming time. Regular programs on the Vietnamese channel now took a back seat to television campaigning. Broadcasting time ran as long as four hours a night.

Although most of the candidates were not veteran politicians and probably none had appeared on television to any degree, they quickly adapted to the medium. All appeared on television to speak to the populace and all were afforded equal time. And although the monsoon season was in process, throngs of viewers gathered nightly in public squares to watch and cheer their favorite candidates. The campaigning spirit was high and a downpour could not spoil the enthusiasm. Placards, banners and even street signing raised the tempo—but it was obvious tht the most effective medium of all was television, for it allowed the people to see and hear the candidates themselves.

More than a year has passed since the first Blue Eagle few over South Vietnam broadcasting television programs. Since then, only a few occasions can be cited when there has been on television broadcast and these can be attributed mainly to the seasonal monsoon weather which exists from May to October and which limits the practicability of flight. The fourth Blue Eagle joined the group in September, shortly before the elections.

The Blue Eagle aircraft are rotated back to the states for major maintenance checks on a regular basis. In this manner, the latest improvements and developments in electronic equipment can be utilized. Each succeeding aircraft is an improvement over its predecessor.

Typical Installations

The typical airborne television transmitting installation consists of three entirely independent, two to five thousand watt transmitters operating

with both aural and visual outputs feel¥ding into broadcast antennas mounted on the underside of the aircraft. The transmitters provide full coverage from channels two through 13. The several sources of program materials which may be fed into these transmitters include two video tape recorders, two 16 mm film projectors, a live studio camera and microphone and numerous audio tape recorders. The dual installation of the equipment provides assurance of smooth “switching” and “fading,” as well as a backup system to ensure nearly 100% trouble- free programming. Aural and visual switching consoles, in addition to an elaborate patching system, provide a means of cross-connecting the sources of various signals from pre-amplifiers into line, liming, and stabilizing amplifiers, and then into the desired transmitters for radiation.

Programming often originates in the studio within the aircraft. Left: Heavily insulated interior blocks out engine and equipment noise. Right: the orthicon camera with its remotely controlled zoom lens and the studio monitor.

View showing two audio-switching consoles, visual-aural monitor (upper center), and aircraft intercommunications outlets. Note picture window looking into the aircraft studio.

A view of the antenna installation showing a high-band, double-bay, co-linear array mounted forward of the nose wheel and several low-band hayrake antennas mounted in-line on the underside of the fuselage.

Radiation is accomplished by aerodynamically streamlined antenna mounted on fixed or retractable masts extending from the underside of the fuselage. These antennas are single or double-bay, co-linear arrays with omni-directional characteristics. These strategically located antennas, when elevated to the aircraft's on-station site of 10,500 feet or more, permits "line of sight" viewing n dives the Blue Eagle Television network an enviable degree of efficiency.

Consistently good viewing has been enjoyed at distance up to 50 miles. Useable signals have been noted as far as the Cambodian capital and in areas nearly 200 miles from Saigon. A "letter of appreciation" has been received from a Cambodian viewer telling of his interest. A young college student in Bangkok reported that he had frequently seen "Blue Eagle Television" at a distance of 400 air miles—theoretically beyond the line of sight and possible only be means of duct transmission.

The entire television electronics installation is powered by a gas turbine power unit utilizing the aircraft's fuel supply. The unit, which was engineered to meet flight requirements, is compact, light-weight and had a low noise level. Yet it is capable of delivering over 125 kilo-volt-amperes of power with the constant voltage and frequency standards required by prevision television equipment.

This unique airborne electronics installation with its highly powered

and transistorized equipment is cooled by two custom engineered ten-ton air conditioning units. These units, part of which had to be mounted in the "baggage" compartment because of the already congested interior, maintain a safe temperature and humidity level.

The crew for this installation consists of a Naval officer with his team of "technical director," video-switcher, aural-switcher, transmitter technician and possible a studio programming assistant. The flight crew is independent of the electronics crew and usually consists of five or six officers and men. A constant communication link is maintained by the flight crew with ground monitors to ensure the quality of the output. Constant on-the-spot monitoring is carried on by the electronics team through the flight.

Ground stations have been built and others begun in different sections of South Vietnam. Project JENNY has now moved to another operating area not covered by present group stations and is still flying nightly. Its operation will continue indefinitely with many auxiliary tasks under consideration for utilization of the aircraft. The possibilities for use of aircraft of this configuration are almost unlimited. The Blue Eagle Television Network expects to be proving valuable service to the U.S. Navy and the fee world for many years to come.