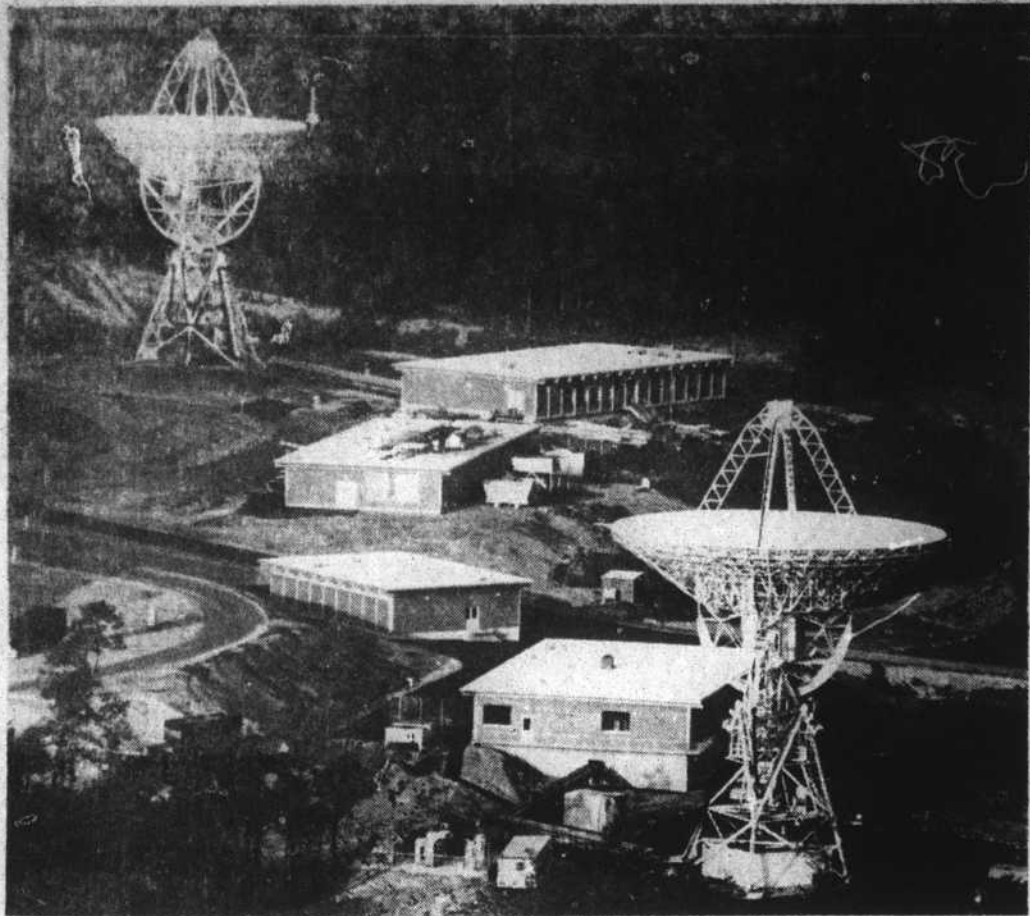


NASA Observes Eighth Anniversary Of Rosman Tracking Station



ROSMAN TRACKING STATION
—Near Balsam Grove in the Pisgah National Forest, the two 85-foot antennas stand as sentinels alongside

the buildings where operators and equipment seek out the satellite signals.

History And Function In The Satellite Program Given

(Editor's note: The following article summarizes the history and complex functions of the National Aeronautics and Space Administration Space Tracking and Data Acquisition Network (STADAN) station near Rosman. It is our birthday salute to an important and appreciated government industry in Transylvania County.)

October 26, 1971 marked the eighth year of operation of the Rosman Tracking Station. James C. Jackson, Director, has announced. The operation of the station began in October 1963, with approximately 60 employees and has reached a present total employment of over 200 people. "I fully expect that further expansion will be required during the next two years in order to be ready for new satellite programs just around the corner," Mr. Jackson reported. "Construction work on buildings and antennas is nearing completion while new equipment is beginning to arrive to prepare for the next family of Applications Technology Satellites."

Headquarters At Goddard

The National Aeronautics and Space Administration (NASA) was established October 1, 1958 and the Goddard Space Flight Center in Greenbelt, Maryland was organized on May 1, 1959. The Center was named for the late Dr. Robert H. Goddard, recognized as the Father of American Rocketry. He designed, developed and flew the world's first liquid-fuel rocket.

The Goddard Space Flight Center is one of ten field laboratory facilities of NASA, and is one of several integrated units under the direction of NASA Headquarters, Washington, D. C.

Role Of Rosman Tracking Station

If you should visit the Rosman Tracking Station you will see one of the largest NASA installations of its type in the family of Goddard Space Flight Center Tracking Stations. The Rosman station has the capability of "tracking" several satellites simultaneously.

Although "tracking" a satellite in the true sense is performed occasionally, the term is generally applied to a number of different functions including, in some cases, electronic measurements made to determine the satellite location. However, in most cases, particularly for satellites that have been operational for over a few days, the orbit and consequently the location is well established. Therefore, the primary activity or "tracking" operation centers around the receipt of operational and scientific information from each satellite, and sending commands - or instructions to each satellite.

People Are The Key

"I have had a number of people ask me — just what is it that the Tracking Station does — and what kind of people are required to track satellites?" Jackson comments.

"The Rosman Tracking Station is one of a team of similar stations located in places such as Hawaii, Alaska, Australia, Chile, Madagascar, Bermuda and Spain. Together these stations and others share the responsibilities of continuously receiving the information being gathered by 30 to 40 satellites — all serving us daily in providing such services as weather forecast information or searching for answers to the mysteries of our universe.

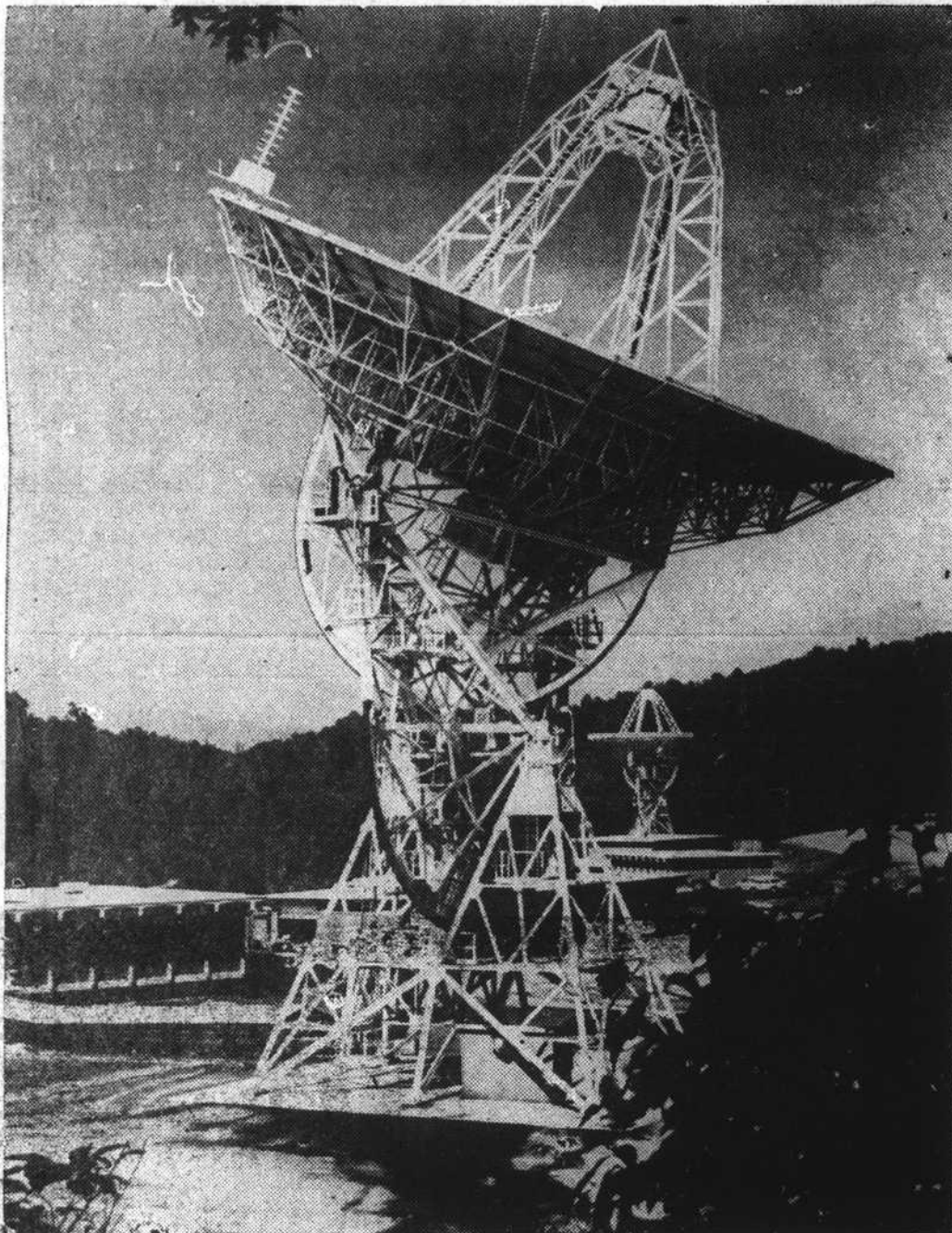
"In one sense, the people who work at the Tracking Station are no different than you might find in some other research and operations business. Here you will find a variety of people skilled in many fields — electricians, mechanics, secretaries, engineers and so forth. In another

sense, you will find people who have uncommon skills and trades associated with the aerospace industry such as specialists in hydraulics, communications, logistics, recording equipment, antennas, radio frequency equipment and so on. In essence, no particular individual or small group accomplish the objective of tracking a satellite — rather, the teamwork of all these various disciplines are required."



OF THE ORIGINAL 58 RCA EMPLOYEES at NASA's Rosman Tracking Station in October, 1963, 26 remain. Standing, from left to right: Clarence Brown, Robert E. Lentz, Kenneth Radford, John E. Smith, Carlos V. Leal, William F. Martin, Donald D. Culin, Emmett E. Owen, George H. Morris. Seated, left to right: Donald Pidgeon, Syvalia M. Owen,

Thurman G. Echols, Harold H. Everson, Robert M. Marshall, Clifton P. Moore, Albert W. Rogers, Paul A. Patrick. Those not included in the picture are: William T. Burbage, Charles Conroy, Clyde R. Davis, Erik O. Hansen, Edward W. Hicks, Walter A. Neubauer, Calvin T. Reece, William A. Reed, John H. Wells.



OUR FOREFATHERS never realized that upper Transylvania would one day be a tremendous

part of the space age. Above is one of the antennas at the Tracking Station above Rosman.

News From

US Forest Service, Rainfall Discussed

In the Editor's Corner last week, Mr. Anderson brought up an interesting point—and that is the great difference in rainfall within a comparatively small area.

So we thought it would be of interest to discuss our rainfall readings throughout the Davidson River watershed in more detail. The reading we reported of 31 inches (9 months) was from the fish hatchery station. Only five air miles away, high up on Shuck Ridge, there were 52.8 inches of rainfall during the first 9 months of 1971.

The surprising thing is that five miles south of the fish hatchery, the town of Brevard had 47.8 inches. Other readings show a trend. Bennett Gap on the Parkway had 47.4 inches; Club

Gap near the Pink Beds 43.5 in; Cedar Rock 36.9 in.

There appears to be a dry area in the center of the watershed with the fish hatchery receiving the least rainfall.

The best answer to this is that the warm moist air from South Carolina is cooled enough after going over Cedar Mountain that we get heavy rains in the Lake Toxaway area (80.08 in. ave. rainfall). Since the prevailing winds are from the southwest the rain is pushed in a northeasterly direction.

As the rains progress toward Asheville, the rainfall decreases. This is substantiated by the official weather bureau figure of 36.83 in. average annual rainfall for Asheville. Brevard re-

ceives an average annual rainfall of 62.43 inches. These figures are based over a 10-year period.

To the north along the Parkway the rainfall more resembles that of Brevard, with this dryer trough lying between the Parkway and Brevard - Toxaway area.

Our records at the Cradle of Forestry show that we had 58 rainy days there between May 1 and Sept. 30.

CARD OF THANKS

Many, many thanks to our many friends and neighbors who showed their deepest sympathy during the loss of our dear beloved wife, mother, sister and daughter, Mrs. Peggy Anne O'Dell. A special thanks goes out to: Minister Don Jones and wife, Minister Terry Angelocos and wife, Reverend Eugene H. Gentry and wife and Reverend Kenneth Bragg and wife.

Buddy, Milton, Teresa O'Dell
Mrs. Linda Lance
Mr. and Mrs. Alvin "Diddle" Owens.

existence of X-ray stars.

A satellite is a spacecraft that has been given sufficient velocity by its launch rocket to be placed in orbit. Ultimately the trace of atmosphere still present at satellite altitudes will slow the satellite down and gravity will pull it back to Earth. The distinction between a satellite and a long range rocket is that the satellite makes one or more complete circuits of the Earth.

Spacecraft that are shot deep into space and escapes the gravitational pull of the Earth completely are called space probes. Depending on the target; they are called lunar, planetary, and deep space probes. Deep space probes are placed in orbit around the Sun to study the solar wind and interplanetary magnetic field. In essence they are artificial planets. One of three things may happen to a probe launched toward the Moon or one of the planets: (1) a near miss or fly-by, (2) injection into orbit around the body, or (3) impact on the surface, with either a hard or soft landing. Fly-by probes usually go into orbit around the Sun after planetary encounter. Lunar probes may swing around the Moon and settle down to become Earth satellites.

Mars Exploration

Of considerable current interest and a good example of the interplanetary probe is the "Mariner 9" probe, presently nearing the completion of its voyage to Mars.

"Although the Rosman Tracking Station is not involved in supporting this probe, we are extremely interested in the outcome of the mission," Jackson stated. The 2,200 pound Mariner 9 spacecraft was launched on May 30, 1971 and is planned to transmit back to earth scientific data on the atmosphere and surface and 5,000 to 6,000 photographs for at least 90 days while orbiting Mars.

Weather Satellites

The earth satellite is the most valuable meteorological tool contributed by the space program. Like rockets and balloons, satellites carry instruments far above the layer of air hugging the ground; like big networks of stations, they afford a wide geographical perspective of world weather. In fact, no combination of surface station networks can match the panorama of world weather radiated back from satellite cameras.

Cloud pictures - the stock-in-trade of the weather satellite-show the great weather systems forming, swirling, and dissolving against the backdrop of the oceans and continents. By taking pictures of the Earth in the infrared portion of the electromagnetic spectrum, weather satellites give the meteorologist information about the heat added to and lost from the Earth and its atmosphere. Since the vast cyclones and anticyclones that roll across the globe are really monstrous heat engines, this heat budget information helps forecast weather. Weather satellites by themselves cannot provide all the information needed for good fore-

casts, but they can help significantly.

Each hurricane is created and sustained by a colossal heat engine that we are just beginning to understand. Somehow, energy from the Sun starts these atmospheric machines turning over. The same is true for the much bigger, but less intense cyclones and anticyclones that make most of our weather. Since weather is really atmospheric turbulence created by too much solar heat at the equator and too little at the poles, measurements of the Earth's heat inflow and outflow should be useful to meteorologists. For this reason, most NASA weather satellites have carried infrared radiometers to record the thermal radiation emitted from the cloud tops and the visible land surface below the satellite.

Weather satellites include Television Infrared Observation Satellites (TIROS), TIROS Operational Satellites (TOS), Improved TIROS Operational Satellite (ITOS), and Nimbus.

In the pre-TIROS days, hurricanes used to sweep in from the unpatrolled oceans and slam into land areas with little warning. Destruction and loss of life have frequently been high; much higher than they would have been with ample warning time. TIROS has changed all that by constantly monitoring cloud cover over the desolate reaches of the oceans. Anyone who watches TV news programs during the hurricane season has seen TIROS pictures of these intense storms and followed their progress along the U. S. Atlantic coast. Satellite pictures often catch these storms in their formative stages, showing the prehurricane squall lines that ring the growing nucleus. Sometimes, a hurricane interacts with a jet stream, giving meteorologists a ringside seat for the battle between these two powerful weathermakers. Without the high vantage point of the weather satellite this drama would go unseen.

Will the Boy Scout hike be rained out tomorrow? Do the smudge pots have to be lit in the orange groves tonight? This is the kind of weather information that most people want to know; that is the local forecast, the local situation. The local weather forecaster would like very much to see what is going on in his area as he prepares his predictions. The APT (Automatic Picture Transmission) system gives him local cloud pictures with a minimum investment in equipment.

Applications Technology Satellites

Mr. James E. Taylor, Assistant Director, describes the "ATS" program as a means to test in space promising techniques and equipment for use in future meteorological, naviga-

tion, and communication satellite systems.

Rosman actively supports the three Applications Technology Satellites currently in orbit, ATS-1, ATS-3, and ATS-5. These satellites are synchronous, that is they orbit the earth in the same time period that the earth completes a revolution about its axis, thus appear to be in a fixed position with respect to the earth. ATS-1 and ATS-3 are routinely used by the National Oceanic and Atmospheric Administration for storm watch duty. ATS-1, while being controlled by Rosman and used for a routine Alaskan educational communications experiment, contributed to the saving of a life as a doctor was able to instruct a nurse at a remote location to stop a hemorrhaging by voice relay through the satellite. AST-5 contributes largely in the areas of the "Millimeter Wave Experiment" for investigation of higher communications frequencies and navigational experiments for aircraft.

A planned addition to the series, ATS-F is to be launched in 1973. Rosman is undergoing modifications and installation at this time in preparation for ATS-F. Rosman will play an important role in checkout of the ATS-F before it is moved to within view of India for educational TV usage.

ATS-F will be placed in synchronous orbit 22,300 miles over the Pacific Ocean, approximately over the Galapagos Islands, where the satellite's 30-foot-diameter deployable antenna and precision control system will make it possible to beam TV signals direct to small TV receivers.

Government Station

Although the NASA Tracking Station is government owned, operation is accomplished by contracting with industry to provide the necessary personnel while the director and assistant director are NASA civil service employees.

In 1963 RCA Service Company was awarded the initial contract for the operation and maintenance of the Rosman station. At the conclusion of this contract in 1967 a subsequent contract was awarded to RCA which also included a Tracking Station near Fairbanks, Alaska Spacecraft Control Centers and Operations Support groups at Goddard Space Flight Center in Maryland. This contract covered a period of five years.

The local Rosman area payroll and expenditures have amounted to over 10 million dollars since the award of the present contract.

When you think of prescriptions, think of VARNER'S, adv.

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