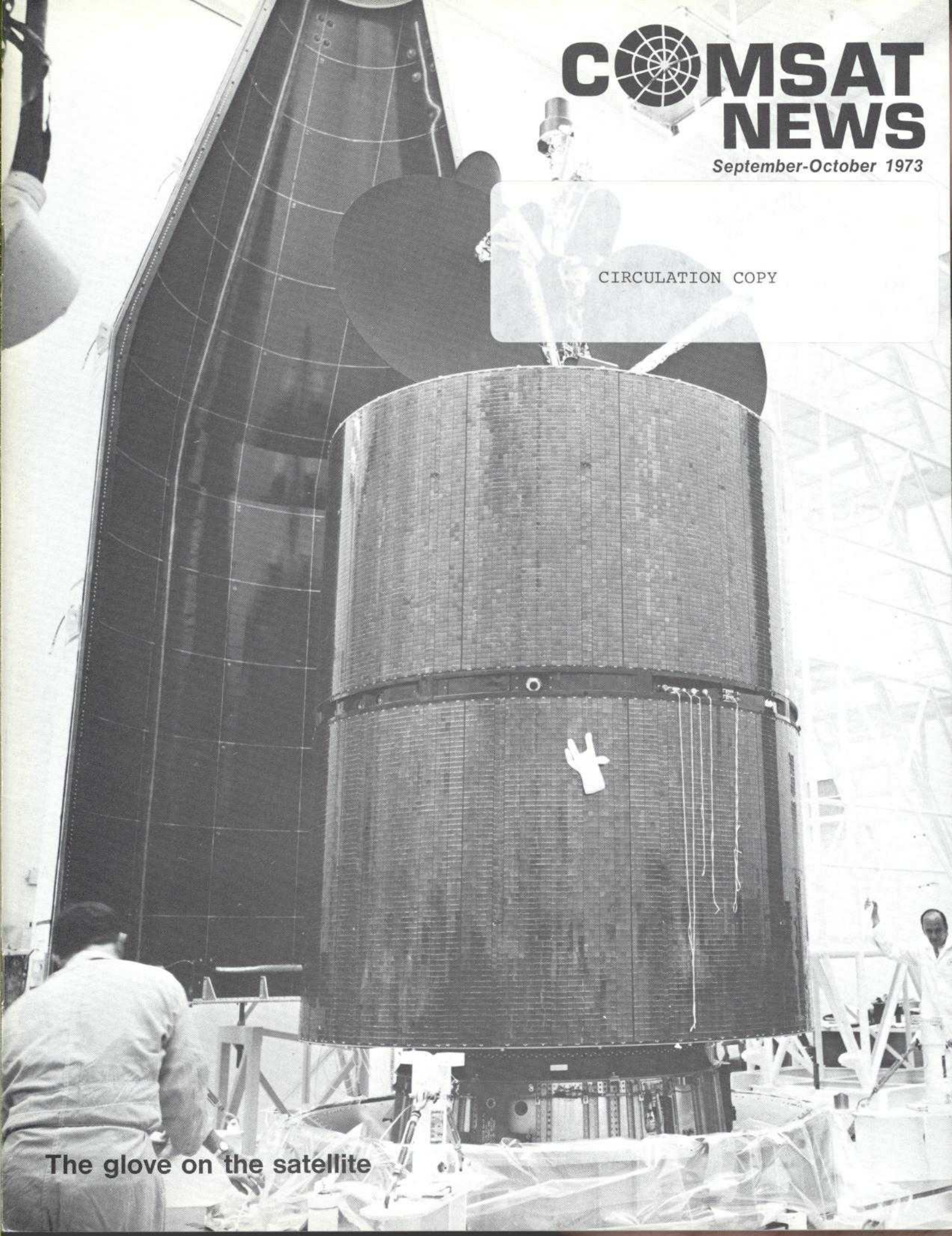
COMSAT NEWS

September-October 1973



The glove on the satellite

COMSAT NEWS

On the cover

"Glove, one each, cotton, white, disposable," how did it get there?

Is it an oversight? Actually it plays an important role in the final stages of spacecraft tests. Although it cannot be seen in this photo, the glove is attached to a string, the string is attached to an S & A pin inside the satellite. What is an "S & A" pin? "S" stands for "safe" and "A" is short for "arm."

Once the apogee motor is placed inside the spacecraft, certain precautions must be taken to prevent any accidental discharge of the solid propellant inside the motor. The pin, therefore, is a safety device which locks the apogee motor's firing device in a safe position and precludes inadvertent arming of the motor. On the morning of launch day, a small door on the fairing allows a long tool to be inserted into the spacecraft to remove the pin so that, shortly before launch, the motor can be remotely armed.

The string plays a simple but important role; it prevents the pin from falling into the internal workings of the satellite. But, what does the glove do? It merely makes the string easier to find.

This information was provided for COMSAT News by Allan McCaskill, COMSAT Launch Vehicle Systems Manager who is shown in the lower right-hand corner of the photograph.

Sept.-October 1973—8th Year, No. 5

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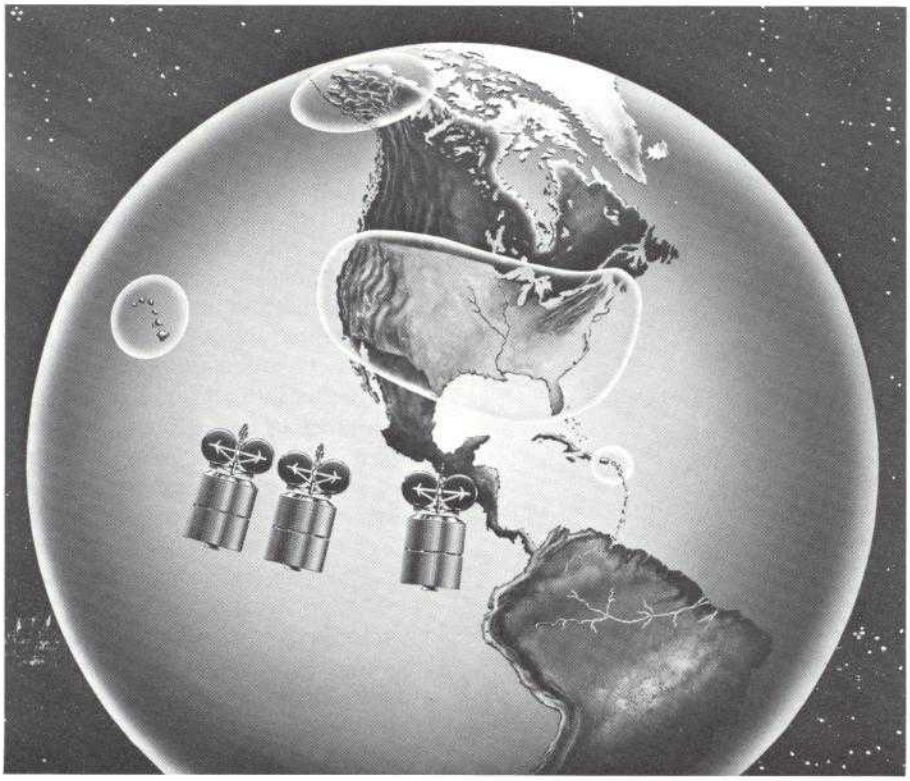


An artist's rendering depicts the proposed domestic space segment.

COMSAT awards satellite contract, delivery of first spacecraft due in 1975

By Hale Montgomery

Work has begun on the construction of four domestic communications satellites under a $65.9 million contract awarded by COMSAT to Hughes Aircraft Company.

Delivery of the first flight spacecraft is scheduled for late 1975.

COMSAT will own and operate the satellites, and lease them to American Telephone and Telegraph Company under a long-term COMSAT/AT&T lease agreement. AT&T plans to construct its own communications earth station facilities, and integrate the satellites into the nationwide switched network.

The contract with Hughes provides that COMSAT General Corporation may be substituted for COMSAT as the contracting party, subject to FCC approval and appropriate financial assurances.

Each of the four new satellites will have a design capacity for approximately 14,400 two-way high-quality voice circuits; three are for in-orbit use and one is to be an on-the-ground spare. The satellites are part of space segment facilities which COMSAT is providing AT&T. Including ground control facilities on the east and west coast, launch services and other equipment, plus the satellites, the Corporation estimates a total investment cost of approximately $180 million for overall program.

The contract award to Hughes came after the Federal Communications Commission (FCC) on September 12 took action on a cluster of domestic system applications before it. The complexities of the domestic satellite issue, which has been pending before the FCC for eight years, were reflected in the Commission's treatment of the various applicants.

• **COMSAT:** The FCC granted COMSAT a limited waiver to proceed with the procurement of the satellites for lease to AT&T, but denied COMSAT construction permits until it submits to the Commission a satisfactory plan for the financing of its subsidiary, COMSAT General Corporation. Such a financing plan, the Commission said, should show the amount of investment to be made by COMSAT in COMSAT General and the liabilities to be assumed by the subsidiary. The object, the Order said, is to insulate the subsidiary company from the parent company's interests in its INTELSAT activities.

• **AT&T:** The Commission approved the AT&T proposal to construct five earth stations at a cost of approximately $32 million to be used in conjunction with the satellites to be leased from COMSAT. However, the Commission conditioned its approval on the requirement that AT&T file regular tariffs for interconnection arrangements, rather than entering into private negotiated contracts with other carriers for interconnection services.

• **GT&E Satellite Corporation/ Hughes Aircraft Co.'s National Satellite Services:** The Commission authorized this combined system, subject to GT&E meeting the same interconnection conditions as AT&T. GT&E plans an expenditure of $52.3 million for earth stations, and plans to lease satellite capacity from Hughes. The Hughes subsidiary plans an expenditure of $42 million to supply the space segment. The Commission also authorized GT&E to own an earth station in Hawaii, and to provide interstate message toll telephone service.

• **American Satellite Corporation, a joint venture by Fairchild and WUI.** The FCC granted authority to build four earth stations and lease channels on the Canadian Telesat Anik satellites under an interim system estimated at a cost of $18 million.

• **RCA Globcom/RCA Alascom.** The Commission authorized the RCA companies to lease capacity in the Telesat satellites for an interim system requiring an investment of approximately $10.3 million. RCA plans construction of earth stations in Alaska and the 48 contiguous states.

■ *Mr. Montgomery is a* COMSAT *senior information officer.*

Chris Mahle (left) and Si Bennett record measurements in the antenna feed area.

Specialized test team completes INTELSAT IV, F-7 in-orbit measurements

By Simon B. Bennett

In-orbit performance measurements of the INTELSAT IV, F-7 spacecraft were performed between August 26 and September 7, at the Fucino Earth Station near Avezzano, Italy.

A specialized test team, its members drawn from various parts of COMSAT, performed these measurements. Assisting with the communications tests were Francois Assal and Dr. Christoph Mahle of the Labs, John Melville of the West Coast Project Office, and Martin Brown of the International System Division. Hokan Holm, also of the West Coast Office, was responsible for the telemetry and command part of these measurements. Also monitoring these tests for Hughes Aircraft Company was G. DuBellay.

In-orbit communications performance measurements have been conducted after the launch of each COMSAT satellite during the last eight years. They have been carried out within the first month after a satellite is in orbit and usually require two to three weeks of intensive effort at an earth station with support from the Spacecraft Technical Control Center in Washington.

The two main purposes of these measurements are to detect any changes in satellite performance relative to its pre-launch parameters as well as to establish a baseline against which to measure in-orbit satellite behavior at a later time.

In order to accomplish these tasks, large quantities of highly sophisticated test equipment are required. For the test at Fucino, 28 boxes weighing 1,540 pounds were shipped from COMSAT Labs to Italy.

After unpacking, the team connected the equipment to the earth station's antenna feed and proceeded with the calibration of the test setup and of the earth station antenna. This process is essential to achieve the high accuracy and measurement repeatability desired and usually takes from two to three days.

Since the intent is to arrive at the performance of the satellite, independent of the earth station or of the remainder of the communication system, specialized satellite measurement techniques and earth station calibration procedures have been evolved and refined.

Although the satellite is in orbit some 22,000 miles from the earth station, and even though a radio signal transmitted to it is reduced in power by a factor of 100,000,000,000,000,000,000 (in engineering terms −200dB), it is possible with these techniques to measure its principal parameters to a high absolute accuracy and with excellent measurement repeatability. For example, two of the most important satellite performance parameters are the power it radiates toward the earth station, its e.i.r.p., and the amount by which the satellite increases the level of a signal it receives from an earth station, its gain. The satellite e.i.r.p and gain can typically be measured to an absolute accuracy within 10 percent (0.5 dB) and 25 percent (1 dB), respectively, with the measurement repeatability being twice as good as the absolute accuracy. Many other communications parameters are also measured to a similar accuracy and repeatability, including noise figure, frequency response, frequency stability, antenna beam patterns, transponder linearity, etc. In addition, since the satellite contains many redundant elements, there are multiple communications paths which are measured.

Switching between redundant communications signal paths is achieved by means of the satellite command and telemetry system. Because extensive use of these satellite functions is required throughout the in-orbit tests, the earth station chosen for such tests has been always collocated with a command and telemetry earth station. There are at present four such stations: Andover, Maine; Carnarvon, Australia; Fucino; and Paumalu, Hawaii.

Two other requirements in the se-

■ *Mr. Bennett is a Communications Specialist in the International System Division and has served as Test Director for all in-orbit satellite performance measurements to date.*

lection of an earth station antenna for in-orbit tests are that the antenna be visible to the satellite in orbit and that it can be made free of communications service. For the most recent measurements, Fucino was chosen because it afforded an opportunity to remeasure the gain of the Indian Ocean area satellite, as well as taking the measurements of the F-7. This station had previously been used for the initial in-orbit tests of INTELSAT IV, F-2 and F-5.

As is true of most visits to foreign countries, there are usually many interesting stories to tell upon returning to the "land of the round doorknob." This trip was no exception.

Just our luck! For the first time in 50 years there was a cholera epidemic in Italy. Of course none of the team had shots and almost immediately after hearing the news, some of us began to feel a little strange, especially when we thought of all that great food we'd eaten and the water we'd used in brushing our teeth.

Fortunately, our panic was unnecessary as COMSAT came to the rescue by sending over a special package of serum and needles—thanks to the efforts of Walt McKee and Mike Hoehne. The local hospital in Avezzano was also very happy to have some of the extra medicine for use in their efforts toward inoculating their own medical staff.

Then there was that great little restaurant up on the hill, where we ate most of our dinners, called Giusseppe's. Actually Giusseppe was the waiter, but we came to like him so much that we lost track of the real name of the place. Giusseppe stuffed us each night until we could hardly move; in fact, just getting past the pasta was hard enough.

The food was just one of Giusseppe's specialties. He had a rather explosive way of celebrating our arrival in Italy. It centered around a drink known as "Green Toro." As we soon learned, there was only one way to drink Green Toro and that was to swallow the entire glassful in a single gulp since there's hardly any other way to get 150 proof alcohol, distilled with green herbs, down the hatch.

Well, most of us made it through the Green Toro, but it was the next ritual that set the bomb off. It consisted of a clear drink called Zambucca. This clear liquor didn't look too bad, but there was also these black things, known as moscas, which turned out to be coffee beans, floating on top that made the whole thing look so uninviting. Coupled with jet lag and a Green Toro, or two, the Zambucca made it very hard to move around the next day—much less talk very loudly.

And then there was that night some of us got lost in this little village. Sometime, I'll tell how it felt explaining the situation to the local constable as a woman in an apartment overhead started pouring buckets of water on our car—at least we hoped it was water.

All in all it was an eventful story. At late report INTELSAT IV, F-7 was functioning properly and so were most members of our test team.

INTELSAT IV, F-7 positioned over the Atlantic

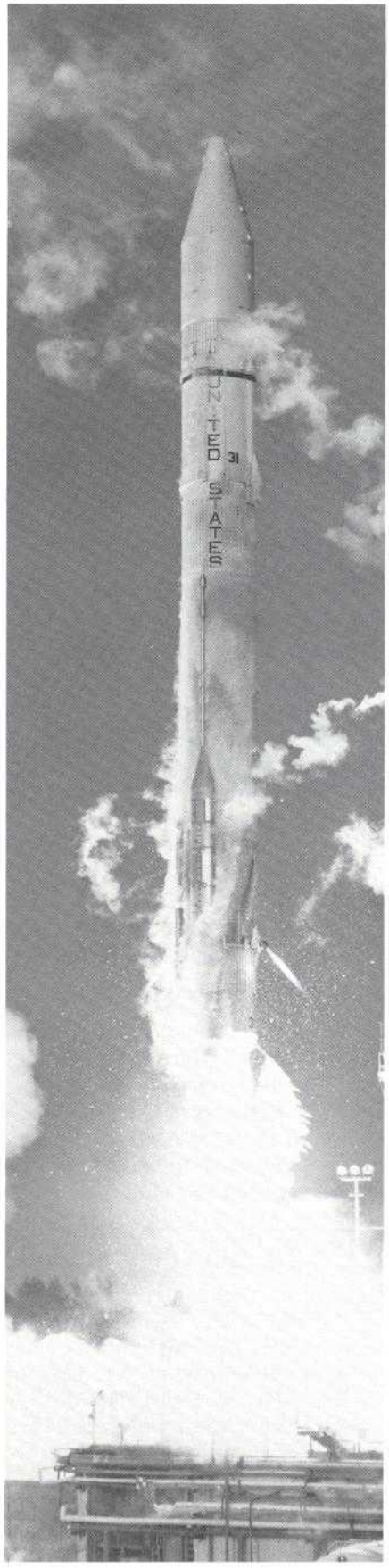
INTELSAT IV, F-7, was launched successfully from Cape Kennedy on August 23, the fifth such launch without a failure in the IV series.

Following successful in-orbit maneuvers, the satellite was placed in a synchronous orbit and positioned at 330.5 degrees East longitude over the Atlantic to serve as a spare in that region.

The satellite, plus launch costs and related services, involved an investment cost of approximately $23.6 million, of which COMSAT, as the largest single owner-representative in INTELSAT, assumed about 40 percent.

Four other INTELSAT IV satellites are now in full-time commercial operation—two over the Atlantic, including the first in the series launched in January 1971, one over the Pacific, and one over the Indian Ocean. All are operating satisfactorily, although the first INTELSAT IV has experienced some loss of gain or power in its receivers and its performance is being monitored closely.

The next launch of an INTELSAT IV currently is planned for early 1974.



INTELSAT IV, F-7 was launched at 6:57 p.m., August 23.

Dr. Harrington
PHOTO BY ALLAN GALFUND

Board elects M.I.T.'s Harrington as vice president

Dr. John V. Harrington was recently elected Vice President, Research and Engineering, by COMSAT's Board of Directors. Dr. Harrington expects to assume his new duties sometime in October.

Before joining COMSAT Dr. Harrington was Director of the Center for Space Research at the Massachusetts Institute of Technology and a member of the M.I.T. faculty. Prior to being named Director of the Center for Space Research, he was head of the Radio Physics Division at M.I.T.'s Lincoln Laboratory, which has been involved in space communications activities at numerous locations around the world.

Dr. Harrington joined the Lincoln Laboratories in 1951, after five years of service with the Air Force Cambridge Research Laboratory as a research engineer working on radar data transmission systems and other microwave communications.

He attended Cooper Union Institute of Technology, receiving his B.E.E. in 1940. He received an M.E.E., in 1948 from the Polytechnic Institute of Brooklyn, and a Sc.D., in 1957 from M.I.T.

Dr. Harrington is a member of several professional organizations and has been awarded the Air Force Medal for Exceptional Civilian Services; the Cooper Union Citation for Exceptional Professional Achievement; and is a Fellow of the Institute of Electrical and Electronics Engineers.

A native of New York City, Dr. Harrington served with the United States Navy as an electronics officer during World War II. He is married to the former Frances Cullinane of Elizabeth, New Jersey. They have five children and two grandchildren.

In a memorandum announcing Dr. Harrington's election, COMSAT President Doctor Joseph V. Charyk stated that Dr. Harrington will be responsible for the present functions of COMSAT Laboratories, major component development activities, and such other engineering activities as may be assigned when a management study of the present technical activities of the Corporation and the areas in which future engineering support is needed is completed.

Dr. Charyk further stated that Assistant Vice President Dr. Burton I. Edelson will continue as Director, COMSAT Laboratory, reporting to Dr. Harrington.

Philco-Ford awarded antenna contract

INTELSAT has awarded a contract to the Philco-Ford Corporation in Palo Alto, California for development of a multiple beam frequency reuse antenna.

The $249,949 fixed price contract to be completed in 15 months, is to develop a lens antenna capable of producing a number of dual-polarized beams which have a high degree of polarization purity and pattern characteristics providing for beam isolation.

COMSAT employees receive emergency cholera vaccine

The cholera epidemic in southern Italy was vividly brought home to several Headquarters employees recently as they arranged for a shipment of cholera vaccine to be sent to the COMSAT staff and their families living and working in the Fucino, Italy area.

Walt McKee was alerted by T T & C Supervisor Mike Hoehne at the Fucino Earth Station that vaccine was not available from the American Embassy and that the local supply was not completely effective.

After a hasty call, the COMSAT nurse Hazel Durant obtained 60 cc. of the vaccine along with 50 disposable syringes.

Later the same day Clarence Holloman and Ed Wabnitz, both of Administrative Services, went into action. Clarence arranged for proper packaging (the vaccine had to be refrigerated at a constant temperature range of 35-40° F.) while Ed coordinated the necessary documentations with Customs.

The result of this teamwork culminated with the vaccine arriving the following morning in Rome where Mike Hoehne picked it up.

Within hours all the COMSAT group were safely inoculated.

New trustee named

COMSAT President Dr. Joseph V. Charyk recently announced that, effective August 1, 1973, the Morgan Guaranty Trust Company of New York was appointed Trustee for the COMSAT Thrift and Savings Plan.

COMSAT begins rebuttal testimony in rate case

Hearings in the ongoing COMSAT rate case have been resumed at the Federal Communications Commission (FCC). COMSAT began with introduction of rebuttal testimony, and then will proceed to the cross-examination of rebuttal witnesses offered by the Department of Defense and the FCC's Trial Staff.

In August, the Trial Staff petitioned the Commission for a 25 percent reduction in COMSAT's rates as an interim measure, pending final resolution of the rate proceeding. The Trial Staff claimed that COMSAT's 1973 earnings from international satellite services were excessive.

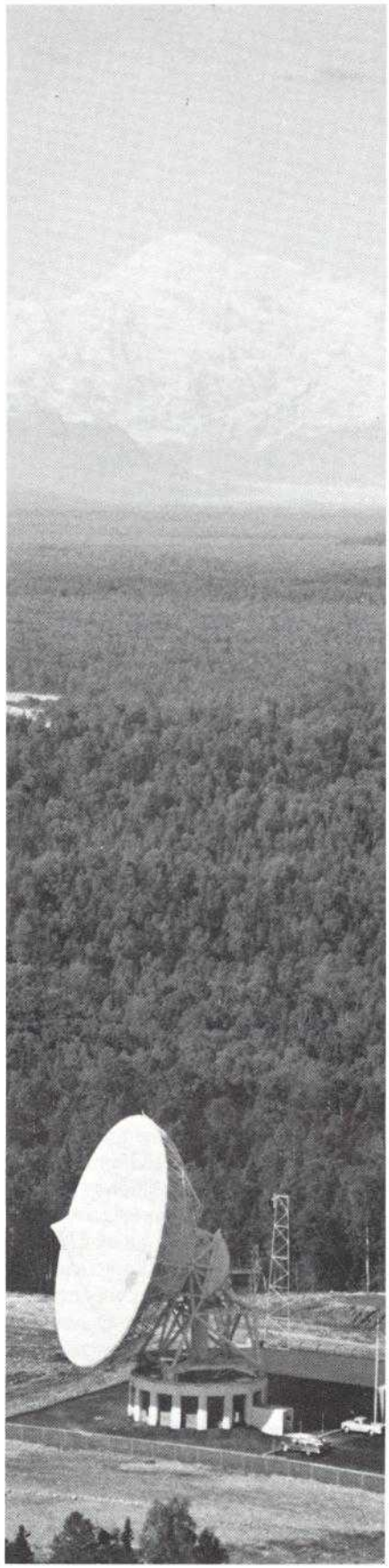
COMSAT vigorously opposed the request as both unlawful and inappropriate. In its filings in response, COMSAT noted that it has presented substantial evidence in the case to support its position that its present rates are just and reasonable and that a rate reduction is not warranted. Moreover, the Corporation said that the appropriate rate base, rate of return, rate structure and other matters—which go to the very heart of the entire proceeding—still are under investigation and both COMSAT and other parties have additional testimony to present. Under these circumstances, the Corporation contended that there is no basis upon which a rate reduction could be ordered at this time.

COMSAT also challenged the course taken by the Trial Staff in seeking direct relief from the Commission, thus bypassing the Administrative Law Judge who has presided throughout the hearings.

Contract awarded

INTELSAT has awarded a contract to the Post Office Corporation of the United Kingdom for scintillation measurements.

The $20,540 six-month contract provides for the investigation of slow scintillation, or variation of signal strength, which is often observed at an earth station located in a humid area and operating at a low elevation angle.



Bartlett is located about 60 miles south of Mt. McKinley.

COMSAT to sell Bartlett Station to RCA Alascom

COMSAT filed an application for consent to assign the license for Bartlett Earth Station to RCA Alaska Communications, Inc. (RCA Alascom) with the Federal Communications Commission (FCC) on September 28.

RCA Alascom, a subsidiary of RCA Corporation, which has been authorized as the long lines carrier for Alaskan telecommunications, proposes to operate the station to carry traffic among locations in Alaska and between Alaska and the contiguous United States, initially using leased capacity in the Canadian Telesat satellite system. (Bartlett traffic presently is routed via the INTELSAT IV Pacific satellite.)

Subject to FCC approval of the application, RCA Alascom will purchase the Bartlett Earth Station from COMSAT. It is expected that RCA Alascom will take the Alaska traffic at that time.

The purchase price of the station is expected to be its net book value at the date of transfer of the traffic. As of August 31, 1973, the net book value was $4,288,431.

In 1972 COMSAT derived gross revenues from Alaska traffic of approximately $3.8 million, or about 3.6 percent of the Corporation's operating revenues. The effect on net income of the loss of the Alaska traffic route would be mitigated by the decrease of operating expenses, including depreciation and taxes, and by other factors that would follow from the sale of the station.

Montgomery named NPC editor

Hale Montgomery, a COMSAT Senior Information Officer, has been named an Editor of the National Press Club RECORD. The RECORD is a weekly publication of the NPC which is mailed to the more than 4,000 members of the Club. Mr. Montgomery, a former Washington journalist, has been a member of the NPC since 1960.

Project manager Kim Kaiser (right) greets Colonel Corsetti at the terminal site in Brasilia.

Small earth terminal experiment again proves to be a success

By Joachim Kaiser

As a result of our small-terminal experiment aboard the *S.S. Hope* last spring and summer, TELEBRAS and the Brazilian Ministry of Communications asked us to demonstrate a small terminal for future possible use in a Brazilian domestic satellite communications system. COMSAT General agreed to sponsor such a demonstration.

The schedule for this was very tight, as the upper half of transponder No. 5 of INTELSAT IV, F-3 was only available until the end of September.

Cal Cotner, Dave Reiser, and I worked feverishly for two weeks before our departure on August 26 to create a new configuration of the *Hope* terminal. We had left the antenna and other equipment aboard the *S.S. Hope* in Maceio and had to incorporate new designs and hardware into a viable whole with some of the equipment 4,000 miles distant.

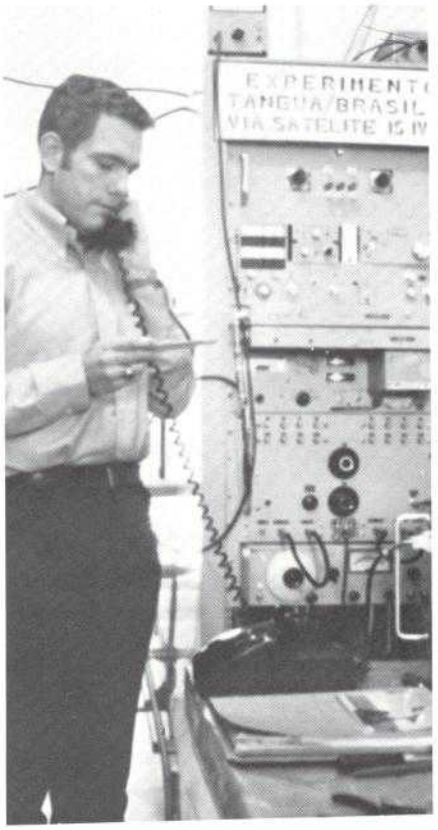
The other end of the link was to be at the standard earth station at Tangua near Rio de Janeiro. From there we were to connect with the Brazilian public telephone system via the international telephone switchboard in Rio. All of this meant new up- and down-converters, and an interface unit for Tangua, as well as our own terminal.

Our itinerary called for us to first demonstrate the system in Brasilia, then take the small terminal to an Army frontier outpost, called Tabatinga, on the Amazon River near the Colombian border.

Dave Reiser and I collected the antenna from the *Hope*, loaded it and ourselves into a C-119 flying boxcar at Maceio and arrived in Brasilia somewhat shaken but not otherwise harmed. In the meantime, Bill Kerns and Cal Cotner packed our 10 shiny new boxes at the Labs, and put Cal and them on a plane in New York bound for Brasilia. Everything and everybody arrived on schedule and we started assembling our station on the roof of the 10-story "Ministério das Comunicaçôes" building. The dish, house, and steel work were hoisted to the top of the building by the local fire department using ropes. We hauled our boxes and ourselves up the last 15 feet from the ninth floor to the roof by ropes and ladders via an elevator access hatch.

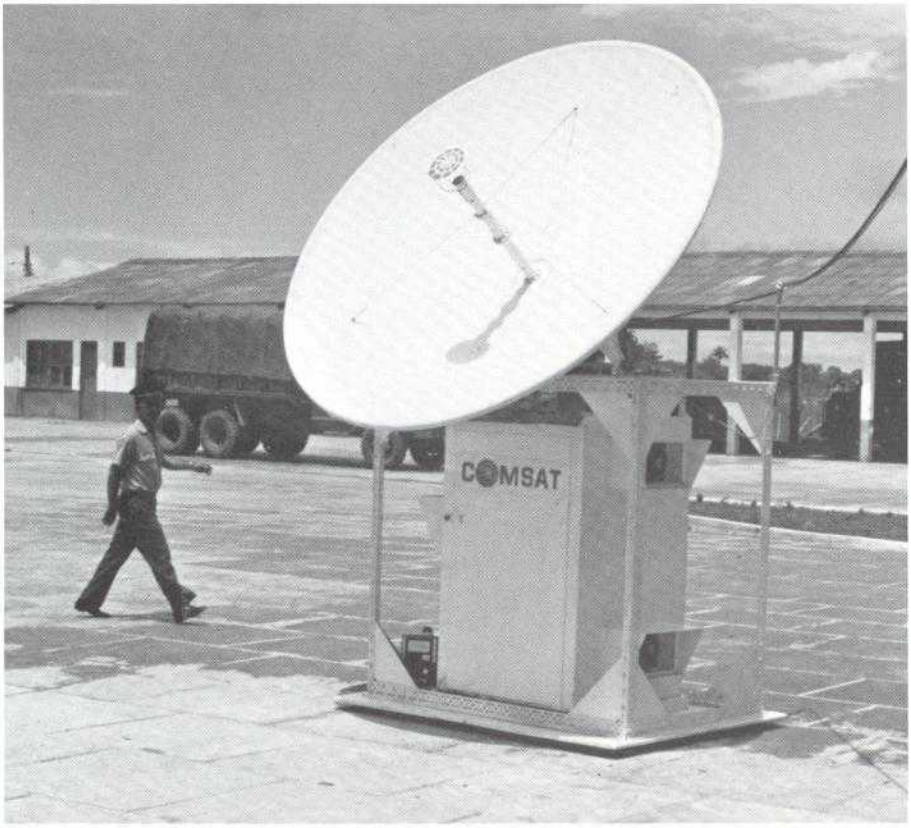
Our station was put together and operating by Sept. 1—exactly on schedule. The Brazilian Minister of Communications, Colonel H. C. Corsetti, made the inaugural call to Tangua on that date.

We had expert help and assistance from two EMBRATEL engineers from Tangua, Luiz Carlos Ventura and Laercio Reis. Cal Cotner, who ably manned the Tangua end of the link, had the best of cooperation and assistance from the Tangua Station



Cal Cotner tests a circuit at the Tangua Earth Station.

■ *Mr. Kaiser is a senior staff scientist at* COMSAT *Labs and project manager for the Brazilian small earth terminal project.*



The terminal on site at Tabatinga, 1,600 miles up the Amazon.

Manager, Senhor Hamilton Bassitt and his entire staff.

There were, of course, some problems. Cal found his up-converter oscillator out of lock, and we had problems with our modulator and the portable teletype. After a Brazilian senior technician spent a day on the oscillator we asked for another from COMSAT. The modulator required considerable redesign and repair, all accomplished after long hours of tedious analysis and measurements with inadequate instruments. Finally, though, we achieved signal to noise ratios, psophometrically weighted, of 47 dB on both ends of the link between our station and Tangua.

The experiment from Brasilia included RCA video voice slow-scan TV, Xerox telecopier, facsimile and teletype, all sent from the ninth floor of the Ministry building in Brasilia via satellite to Rio de Janeiro, then by microwave back to the eighth floor of our building.

On September 13 we dismantled the station and packed it for shipment to Tabatinga, 70° West longitude and 4° South latitude. Our C-47 admitted the antenna through the door all right, but the fuselage was too small for our 8-foot diameter reflector. Thus, after some fast rearranging, we got our trusty C-119 back to do the job.

Dave and I went commercial to Manaus, a famous seaport and in days past the center of Brazil's rubber boom, nearly 1,000 miles up the Amazon River.

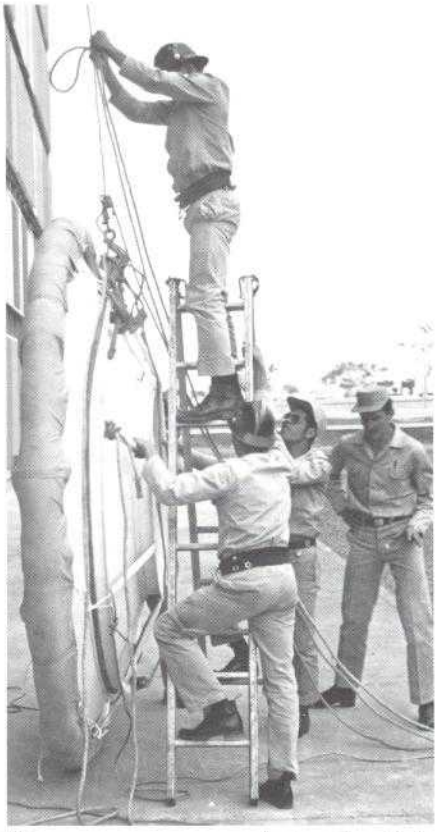
There we met the C-119 for an incredible flight to Tabatinga. Below us was nothing but trees and water for over 600 miles. We smiled at the thought of using the parachutes which had been dutifully placed at our disposal. Where would one land? And if one survived the jump, when, if ever, would one be found again? The six barrels of high-test gas stored in the back of the plane did not exactly help our confidence, but all went well, and we landed safely in Tabatinga, on September 15.

After a short siesta—which was very necessary indeed—we put our station together and got it operating in less than four hours, just in time to go from tar-melting boiling sunshine to the usual afternoon Tabatinga torrent, a cloudburst of fantastic intensity.

We were ready, but alas, no carrier from Tangua, even worse was the discovery of another carrier right in our slot. For more than two days, Dave and I tried to unravel the mystery. Our attempts to communicate with Cal Cotner at Tangua or the IOC in Washington failed until Monday night (September 17) when we managed to get through to Washington by amateur radio and, simultaneously, to Cal by using a single-sideband radio in an amphibious aircraft.

Our suspicion of a "cable restoration" in our transponder was verified. With the gracious assistance of Al Churchwell of TOCC/Atlantic, the IOC and France, we had our transponder back and were on the air by Tuesday morning, September 18.

The link, once established, was put to good use from Tuesday until late the following Friday night. Calls were made to Paris, Madrid, Washington, and many places in Brazil. In addition, we transmitted TV pictures to Spain and Brasilia. There were over 250 telephone calls logged, many of them lasting 15 minutes or more.



Firemen prepare to hoist the dish to its rooftop location in Brasilia.

The experiment was a complete success. Our link consisted of one FM channel of excellent quality. From Tangua we used 80 KHz peak deviation and from our station we sent 50 KHz peak deviation. We had signaling for Tangua and the International board in Rio. At our end the final instrument was a 4-wire telephone, the other end interfaced with the Brasilian telephone network.

The day before our departure our Air Force pilot told us that the runway was too short and our load too heavy for a safe takeoff in the C-119, so we left many items with the local schoolmaster in Tabatinga, then departed in a Buffalo, a somewhat safer conveyance.

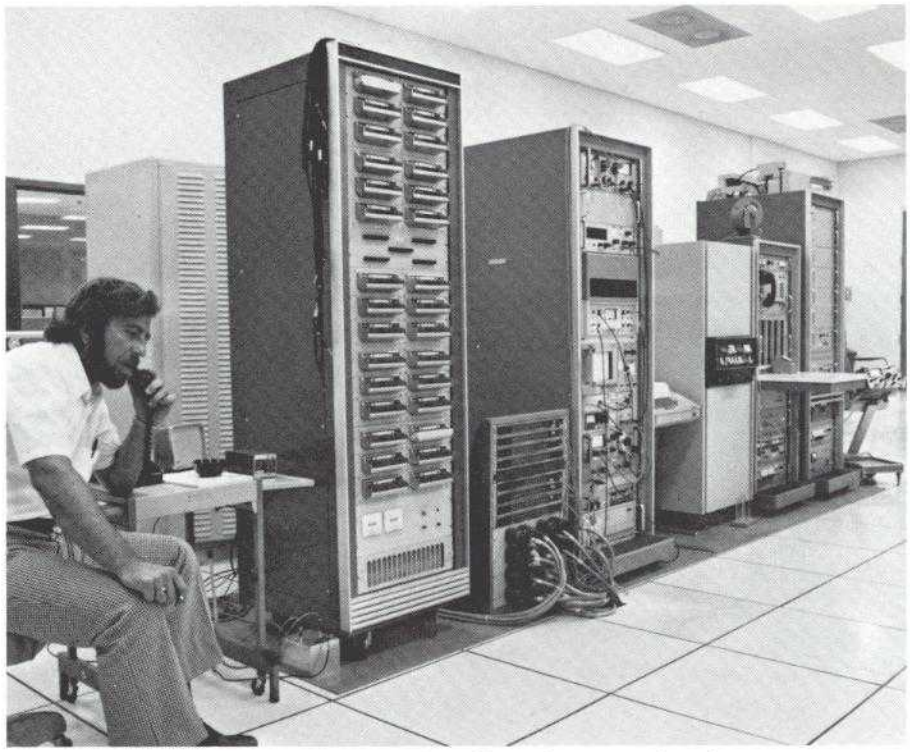
We know that the Brazilians were very pleased with the experiment, as are we. It demonstrated once again the feasibility of using a small earth terminal for communications in remote areas. The emotions and reactions of the people in Tabatinga at their first chance ever to communicate with friends and family in distant parts of the country gave meaning and value to the long hours, hard work, discomforts, and risks involved in our experiment.

We are well aware that an 8-foot station with a G/T of 13.4 dB/°K might be too small for an economical use of the satellite resources. However, our experiment demonstrated in a dramatic way the usefulness and quality of satellite communications in areas of the world where virtually no other form of communications now exists.

Electric thruster contract awarded

The International Telecommunications Satellite Organization (INTELSAT), has awarded a contract to Electro-Optical Systems, California, for a prototype north-south stationkeeping electric thruster. The $265,000 contract is to be completed within 17 months.

The primary objective of the work is to design, fabricate, test, and deliver an electric thruster suitable for the north-south stationkeeping of a synchronous communications satellite.



SPEC Project Manager Joseph A. Sciulli evaluates a circuit.

SPEC field tests completed, initial results appear good

"One of the best quality overseas calls I have ever made." That was just one of many comments by callers talking from Washington, D. C. to Hawaii via satellite using the Speech Predictive Encoding Communication System (SPEC).

SPEC was installed for field tests at the Paumalu and Brewster Earth Stations in August. Parallel live traffic was carried through the system over the Pacific INTELSAT IV satellite. More than 100 users were able to evaluate the system under a variety of operational conditions in the U.S. through a leased 4-wire voice circuit from the Brewster station to COMSAT Labs in Clarksburg, Maryland. The terrestrial portion of the circuit was extended from the Labs to interested persons in other areas of the U.S. and Canada for evaluation purpuses.

An echo canceller developed by COMSAT Labs provided echo protection to the Paumalu, Hawaii end of the circuit when interface with two-wire circuits was necessary. The canceller provided the user with echo-free performance on the demonstration circuit.

During the field test, SPEC was loaded with 64 toll-quality voice circuits using the same satellite power and bandwidth requirements normally used for 24 conventional FDM circuits. Test results indicate that systems performance, when fully loaded, did not cause any perceptible voice quality degradation.

Data from the initial field tests are being analyzed to show that the system meets international toll-quality transmission requirements. The equipment remains located at the Paumalu and Brewster stations and will be used for digital voice demonstrations while additional performance data is collected.

The system was developed in the Communications Processing Laboratory of the COMSAT Labs under the supervision of Project Manager Joseph A Sciulli.

Plans for commercial use of SPEC in terrestrial and satellite networks are now being formulated.

COMSAT General President John A. Johnson discusses satellite R&D.

Satellite panels highlight EASCON '73

By James T. McKenna

More than 600 members of the aerospace community gathered at EASCON '73, held in Washington, D. C. last month, to hear the experts discuss aerospace plans for the 70s.

COMSAT General President John A. Johnson joined in a panel discussion on the future of research and development in the communications satellite industry.

Many attendees expressed concern about tomorrow's communications satellite research and development efforts, particularly since NASA withdrew from the area last year. Panelists were asked approximately how much their company planned to invest in communications satellite R&D. Most declined to give any financial figure, but Mr. Johnson stated that COMSAT and its subsidiary, COMSAT General, will spend about $40 million on satellite R&D over the next two years. This amount will include work being done by the COMSAT Labs and by spacecraft manufacturers, under contract to COMSAT, who are currently building $180 million worth of satellite systems to be used by INTELSAT, AT&T, the U.S. Navy and the commercial maritime industry.

Senator Frank Moss (D-Utah), Chairman of the Senate Subcommittee on Aeronautical and Space Sciences, appearing on the same panel, felt that the government will again have to become active in satellite R&D because of tremendous development costs. Senator Moss began hearings this month with NASA to determine how the research and development costs associated with the near 30 communications satellites needed in support of the space shuttle program will be funded.

Domestic satellites highlighted another of the conference's panel discussions. Potential system operators explained their system to the group, listing transponder capacities and launch dates, and generally painting an optimistic view of the future.

A possible system user, Westinghouse Electric Corporation, commented, however, that a number of major areas remain to be satisfactorily coordinated, including terrestrial interconnections and responsibility for a malfunctioning or bad circuit, before customers will put communications traffic in the new satellite system.

In addition, another panelist noted the possible proliferation of satellite capacity if all proposed domestic satellites are launched successfully. As a result, he wondered if there would be enough customers to keep all the satellite service companies in business.

In an afternoon session, the use of communications satellites for the maritime industry was discussed in a presentation by Edward J. Martin, COMSAT General's Director of Mobile Systems Programs and a representative of the European Space Research Organization (ESRO). In his remarks, Mr. Martin explained the Corporation's proposed plan to serve the U.S. Navy and the commercial maritime industry. He mentioned that the first satellite is scheduled to be launched and operational late in 1974 and that initially the U.S. Navy will use most of the bird's capacity. The remainder of the circuits will be available to the maritime industry for the transmission of two-way voice and record traffic between shore and ships at sea. When the satellite is totally dedicated to the maritime industry it will have a capacity of eight voice circuits or the record traffic equivalent.

David W. G. King, Coordinator, Maritime Systems, for EXXON presented the potential customer's point of view on maritime satellites. "If a priority list of communications satellite services had to be made, I would rank high quality and reliable teletype service as the most important communication service for EXXON's ships. This service must be available at a reasonable cost to the fleet." Mr. King hoped that individual ship costs could be kept to $10,000 or less per year. He believed this could be done if 3,000 ships were using the satellite system by 1980.

At that time, said Mr. King, ships on order and in the design stage would be fitted with satellite communications equipment before they sailed on their maiden voyages. "By 1977 or even earlier, the first new ship could sail with a full satellite system as an integral part of its facilities." He further stated that he hoped international institutional arrangements could be accomplished in 1975 with a complete international system being in operation in 1976-77 so the industry could have the communications system it needs so badly.

In addition to the COMSAT General presentation, Dr. Jean Vandenkerskhove, Head of the Program Office for ESRO explained its plans to establish another maritime satellite system (MAROTS) using a body-stabilized satellite. The first satellite in this system is scheduled to be launched in 1977. System costs will be shared by a number of European nations with the United Kingdom being the largest investor.

■ *Mr. McKenna is a* COMSAT *information officer.*

The fair grounds were open from 10:00 a.m. to 10:00 p.m. every day.

COMSAT's booth, under the supervision of Senior Information Officer Allan Galfund, attracted many visitors during the fair.

Hostess Pat Newman pins a COMSAT button on a young visitor.

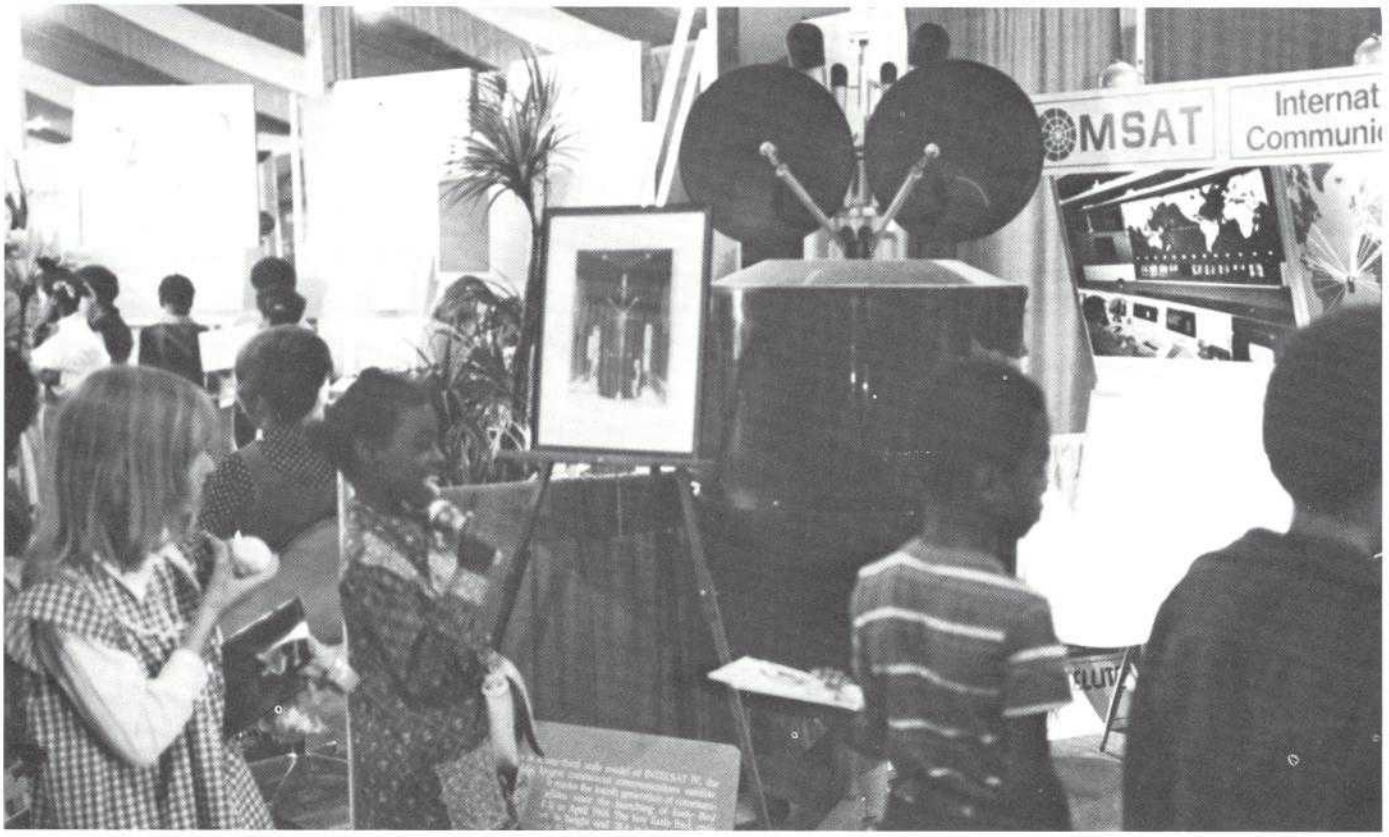
COMSAT exhibit draws record crowds at state fair

An exhibit featuring the global satellite system as well as the proposed domestic and maritime satellite systems was part of a COMSAT display at the annual Virginia State Fair held in Richmond from September 20 to September 30. A one-third-scale model of the INTELSAT IV rounded out the display.

The INTELSAT IV model was attractively shown in the Virginia Building and was surrounded by murals describing the different satellite systems. Visitors to the COMSAT booth were given global communication satellite system maps which proved to be a popular item among schoolteachers and their pupils. The COMSAT booth attracted large crowds during the entire ten days.

Fair officials estimated that more than three quarters of a million people attended the 10-day exposition.

Colonel C. H. Reed, Fair President (left) and Dr. George Morrow, Fair Agricultural Manager visited COMSAT's booth.



Many Richmond school children learned of satellite communications for the first time.

PHOTOS BY ALLAN GALFUND

Staff members awarded new patents

Sixteen new patents have been issued recently for inventions resulting from work done by COMSAT staff members.

While the Corporation owns the patents and retains all rights to them, under COMSAT's patent incentive program each inventor is entitled to a cash award. In addition, further recognition is given to the inventor by having his name appear on the particular patent.

The following is a partial list of the inventors, the patent titles, and a brief description of each invention. Additional inventions will be listed in the next issue of the COMSAT News.

• **Arthur F. Standing** (COMSAT Labs): Reduction of Intermodulation Products, which is an apparatus for reducing the intermodulation products in active devices such as klystrons, traveling wave tubes, and limiters.

• **William G. Schmidt** (former COMSAT Labs employee) and **Arthur F. Heers** (Hughes Aircraft Company): Method for Minimizing Bit Errors, which is a means for minimizing the subjective effect of bit errors on PCM-encoded voice communication.

• **George D. Dill** (COMSAT Labs): Terrestrial Interface Unit, which relates to a demand assigned multiple access system in which a chosen satellite RF frequency band is divided on the basis of assigning a single voice channel per RF carrier.

• **Marvin Wachs** (COMSAT Labs): Phase Distortionless Limiter, which relates to an improved IF amplitude limiter that eliminates phase distortion found in prior IF amplitude limiters.

• **Bruno L. Blachier** and **Andre R. Champean** (former INTELSAT nominees): Plural Cavity Bandpass Waveguide Filter, which has two cascaded double-tuned cavities that are resonant in two independent orthogonal modes and provide a bandpass response.

• **O. Gene Gabbard** and **Pradman Kaul** (former COMSAT Labs employees): Digital Differential Pulse Code Modulation System, which transmits the difference between a given sample of an input signal and an estimated value of a given sample. The differential signal is fed back to an all digital loop to provide an estimated sample without undue delay.

• **Fred H. Esch** (COMSAT Labs): Novel Battery Discharge Sensor and Control, which prevents the discharge of connected voltage cells from reaching a low level by monitoring the voltage level of selected cells.

• **William G. Schmidt** (former COMSAT Labs employee) and **Nobuhiko Shimasaki** (former INTELSAT nominee): Satellite On-Board Switching, which relates to the use of a space-division technique which allows the same frequencies to be used by a number of earth stations.

COMSAT contributes the United Way

COMSAT President Joseph V. Charyk (left) prepares to sign the Corporation's annual U.G.F. contribution check as Fund Coordinator Louis B. Early watches. This year, as in the past, all employees will have the opportunity to contribute to this worthwhile cause. PHOTO BY J. T. McKENNA

Nippon Electric awarded digital modem contract

INTELSAT has awarded a contract to Nippon Electric Company, Limited of Tokyo, Japan for the development of high performance, four-phase CPSK (coherent phase shift keying) modems.

The $60,431 fixed price contract, to be completed in seven months, is to develop modems (modulator-demodulators) capable of optimizing the present channel capacity of an INTELSAT IV global beam transponder in transmitting digital information by varying phase position of the RF (radio frequency) carrier. The modems will also be able to be utilized in future communications systems using transmission rates up to 125 Mb/s (million-bits-per-second).

Mr. Gerstner

Mr. Jawer

CML elects new president as three COMSAT employees join staff

The Board of Directors of CML Satellite Corporation on September 25 formally elected Hilliard W. Paige, former President of General Dynamics Corporation, as Chairman and Chief Executive Officer of the Corporation.

CML, which plans establishment of a multipurpose domestic communications satellite system, is jointly owned by COMSAT General, MCI Communications, Inc., and Lockheed Aircraft Corporation.

Three former COMSAT employees recently joined CML. Marvin R. Jawer was named as General Counsel and Secretary of CML.

Prior to joining CML Mr. Jawer was an Assistant Secretary and Attorney to COMSAT, the parent company of COMSAT General. He has been serving as Secretary of CML since February of this year.

Before coming to Washington he was an Associate in the New York City law firm of Cole and Deitz.

Mr. Jawer received his Bachelor's degree from the University of Wisconsin in 1965, and graduated from the University of Wisconsin Law School in 1968. He is married and resides in Chevy Chase, Md.

Mr. Engel

CML also named former COMSAT employees John F. Gerstner as Director of Marketing Operations and Gerald R. Engel Director of Economic and Regulatory Planning.

Mr. Gerstner joined COMSAT in the fall of 1968, and served as Manager for Market Development and later was Manager for Communications Systems Requirements for COMSAT General.

A native of Ohio, Mr. Gerstner served more than 27 years in the U.S. Army, retiring from active military service in 1967 as a Colonel. Mr. Gerstner and his wife, the parents of seven children, reside in Alexandria, Va.

Mr. Engel joined COMSAT in August, 1970 as Director, Financial and Regulatory Analysis, and in 1971 was named Director, Financial Planning and Analysis.

A native of New York, Mr. Engel holds a Bachelor's degree in Physics and a Master's in Finance and Marketing, both from Adelphi University in Garden City, N. Y. Mr. Engel and his wife are the parents of three children and reside in Vienna, Va.

Attenuation study awarded to EMBRATEL

INTELSAT has awarded a contract to Empresa Brasileira De Telecomunicações (EMBRATEL) of Rio de Janeiro, Brazil, for the operation of an INTELSAT-owned transportable receiving terminal.

The six-month, $45,948 contract provides for the selection of and shipment to a Brazilian operational site and the operation of the terminal for the specified period to obtain precipitation attenuation data in an equatorial climate.

INTELSAT membership

Membership in the International Telecommunications Satellite Organization (INTELSAT) reached a new high on June 6, as Iraq became the 83rd member with an initial investment quota of 0.05 percent.

Highlights of Board of Governors' fourth meeting

The INTELSAT Board of Governors held its fourth meeting in Washington, D. C., from September 5 to 12.

Twenty-one Governors, representing 60 of the 83 signatories, were present at the meeting.

The meeting was attended for the first time by a representative of the second African regional group, which is composed of Cameroon, Gabon, Ivory Coast, Senegal and Zaire.

Among its major actions, the Board:

- Requested the Manager to provide a detailed report to the Technical Committee on the technical and operational impact of changes proposed by Hughes in INTELSAT IV-A specifications, and to prepare an analysis for the fifth meeting of the Board on contractual aspects of such modifications. These specification changes primarily involve a modification of the antenna coverage pattern and substitution of a different switch on several transponders.
- Agreed to several changes in the terms of reference for the Advisory Committees on Technical Matters and Finance. The Special Committee on Long-Range Planning was redesignated the Advisory Committee on Planning.
- Asked the Advisory Committee on Planning to conduct a study related to alternative means of procedures to stimulate additional earth station construction to extend saturation time of the INTELSAT system. The Secretary General and the Manager were requested to consider the legal implications of such procedures.
- Favorably received Algeria's request for domestic service on the INTELSAT system using a network of non-standard stations to become operational in 1975, and requested the Manager and the Advisory Committee on Finance to undertake a detailed analysis of the service requirements and possible utilization charges.
- Agreed to act on the 1974 research and development funding level when the Advisory Committee on Technical Matters presents its recommendations on the Manager's detailed program for 1974.
- Referred to the Advisory Committee on Technical Matters the INTELSAT V Systems Definition Study presented by the Manager. The Board also referred the Manager's study of the feasibility of providing maritime services on the INTELSAT satellite system to the Advisory Committee on Technical Matters for consideration with the INTELSAT V studies.
- Authorized further studies on a maritime package to be included in the INTELSAT V satellite to be carried out by the Manager under the direction of the Advisory Committee on Planning.
- Requested the Manager to seek the views of the Operations Representatives on the "operational spare" philosophy developed by the Advisory Committee on Planning, since this concept appears to provide economic advantages by using the spare satellites in each region as operational satellites.
- Approved the request of Brazil for access by the COMSAT-owned non-standard DICOM terminal without charge, from September 6 to November 30, 1973, to the primary INTELSAT IV satellite in the Atlantic for the purpose of conducting a demonstration program.
- The Board also granted initial approval to access INTELSAT IV satellites to the Buitrago 3 (Spain) and Zemengoe (Cameroon) standard stations, and formal approval to the Asadabad (Iran) and N'koltang (Gabon) standard earth stations.
- Requested the Advisory Committee on Finance to provide advice on future charging policy for SPADE, including the establishment and level of a per-minute charge and its possible combination with an access channel charge.
- Discussed the organization of the executive organ and negotiation of the Management Services Contract with COMSAT.
- Requested the Secretary General to transmit necessary information to IMCO (The International Maritime Consultative Committee) for consideration at its November 1973 meeting of the establishment of a formal relationship between INTELSAT and IMCO.
- Initiated discussion on the U.S. Governor's proposals for inter-system coordination procedures between INTELSAT and other satellite systems. This proposal was referred to the Advisory Committee on Technical Matters for review and comment.
- Deferred until the October meeting the subject of the lease of Governors' offices in the new INTELSAT headquarters building.
- Amended the Rules of Procedure to permit both the Secretary General and the Manager to place items on the agenda of Board meetings.
- Scheduled the next meeting of the Board for October 17 to 24 in the Canary Islands.

Dorian elected

Charles Dorian, Manager, Maritime Program Development, for COMSAT General, was recently elected Vice-Chairman of the Washington Chapter of The Institute of Navigation.

The Institute is a national organization of approximately 2,000 members dedicated to the advancement of the art and science of navigation.

In March 1972, Mr. Dorian joined COMSAT after retiring from the U.S. Coast Guard as a Captain with 30 years of service.

Since then he has been actively involved in the national and international aspects of maritime satellites.

Havana to Bucharest via satellite

Marking the appearance of Rumanian President Nicolae Ceausescu on a state visit to Cuba, the first satellite telecasts from Havana to Bucharest were recently transmitted over the Atlantic Ocean via an INTELSAT IV satellite.

Using the tropospheric scatter broadcast technique, the telecasts were sent from Cuba to Florida. They were then relayed via microwave to the COMSAT-operated earth station at Etam, W. Va., then sent via satellite to an earth station at Fucino, Italy, and overland in Europe to Bucharest.

The Standards Board, a shift in emphasis

The following is an editorial written by Robert D. Briskman which appeared in the July issue of The Institute of Electrical and Electronics Engineers (IEEE) magazine, Spectrum. *Mr. Briskman is Director, Domestic System Programs,* COMSAT General *and also serves as Chairman, IEEE, Standards Board.*

The recent change in designation of IEEE's Standards Committee to Standards Board marks IEEE's awareness of the changing and expanding role that standards can expect to play in the future, both within the United States and throughout the world.

IEEE is reviewing its current standards to determine their suitability to meet national and international needs. The Institute has already carried out important projects in the development of standards adopted by the Atomic Energy Commission and the Department of Defense. It is also increasing its international standards activities, and has initiated a new program for the development of standards on consumer products and safety.

Today's climate for standards is one of increasing regulation. In the United States, regulatory agencies are looking to the engineering societies for standards adaptable for mandatory use. When such standards do not exist, or are framed in terms that preclude enforcement, the regulatory agencies usually issue their own standards. As for the international climate, the world is moving rapidly into a period when most countries will require certification of electrical and electronics goods in conformance with recommendations of the International Electrotechnical Commission.

As voluntary standards disappear from both the national and international scenes, the IEEE, and the rest of the standards-developing community, must undergo a shift in emphasis.

This year marks the diamond jubilee of IEEE's commitment to standardization in electrotechnology. During the past 75 years, the Institute has diligently pursued standards development in such areas as test methods, rating methods, definitions, units, and symbols—areas of concern for the professional engineer advancing the state of the art.

We are mindful of the impact that will be exerted on the engineering community by the programs in such government agencies as the Occupational Safety and Health Administration, the Environmental Protection Agency, and the National Consumer Product Safety Commission. We are determined that standards-setting in areas vital to the electrical and electronics engineer continues to reflect technological advances which will enable the professional to carry out his activities in a manner providing the greatest service to society, the economy, and himself.

Contract awarded

The International Telecommunications Satellite Organization (INTELSAT) has awarded a contract to Empresa Nacional de Telecomunicaciones S.A., ENTEL-CHILE of Santiago, to conduct dual station ionospheric scintillation measurements.

The $26,670 fixed price contract is for the investigation of the sizes and movements of the ionospheric irregularities that cause satellite signal fluctuation (scintillation) at 4 and 6 MHz in the geomagnetic equatorial region. Under the contract, data will be collected for a 10-month period including the months of high scintillation activity which occur near the spring and fall equinoxes.

1972 annual report wins two major industry awards

COMSAT's 1972 annual report has been named winner of two major industry awards.

Earlier this year, the Advertising Club of Metropolitan Washington presented one of its coveted ADDY awards to the agency which assisted the COMSAT Information Office staff with the design of the report.

More recently, *Financial World* selected the 1972 report as the second place winner in the communications industry category.

"Oscar-of-the-Industry" trophies will be presented to all winners on October 31, at an Awards Banquet in the New York Hilton Grand Ballroom.

COMSAT's award winning report was chosen from literally thousands of such reports judged by a panel of professionals specializing in annual report planning, design, and production.

A national program of language reform moves forward

By Professor Francis Shieh

One-fourth of the people in the world speak Chinese, but how many of the remaining three-quarters understand what they're saying? Not many at all!

The reasons for this anomaly vary. One is that Chinese is a complicated language (even the Chinese have trouble with it); another reason is that there are three major different ways to convert Chinese characters into a phonetic alphabet, and most Westerners who are studying the language are not learning the method that is being taught to the Chinese people themselves.

Recognizing the communication problems created by an unwieldy Chinese language, Peking officially adopted a language reform program in 1958. The program called for simplifying Chinese characters, romanizing them through the Pin Yin system, and establishing a common spoken language—for although the characters representing a Chinese word were the same throughout China, pronunciation varied widely. Because Mandarin Chinese is spoken by a large percentage of the population it was chosen as the common spoken tongue.

In spite of obstacles inherent in any attempt to change a language, the Peking reform program appears to be moderately successful. Many schools in China now teach phonetic alphabets or spelling. Significantly, a braille code of romanized Chinese characters was introduced in 1964. Records and references (such as dictionaries, directories, catalogues, and files) are currently indexed by the romanized Pin Yin system, which is also used for communications such as telegrams, railway information, and signals at sea. Public signs at bus stops, as well as street signs, are written in two ways: in the old script of characters and in the new letters of romanization.

This success does not bode well, however, for the students of Chinese in the United States. Peking's success means that only one method of converting characters into an alphabet—the Pin Yin—will be used throughout mainland China. This method is rarely taught in the United States. More than half of the 150 colleges currently teaching Chinese use a system developed by linguists at Yale in the 1950's. Many of the other colleges use the long-established Wade-Giles system.

Thus, while mainland China is teaching one way to romanize Chinese, we are often teaching another. The implications are obvious. Our students of Chinese will have difficulty in understanding Chinese as it is written on the mainland, and people on the mainland won't understand "our" Chinese. This situation would be ludicrous if communication among peoples were not a critical factor in international affairs. Even though sounds are supposedly the same, the phonetic alphabets are different.

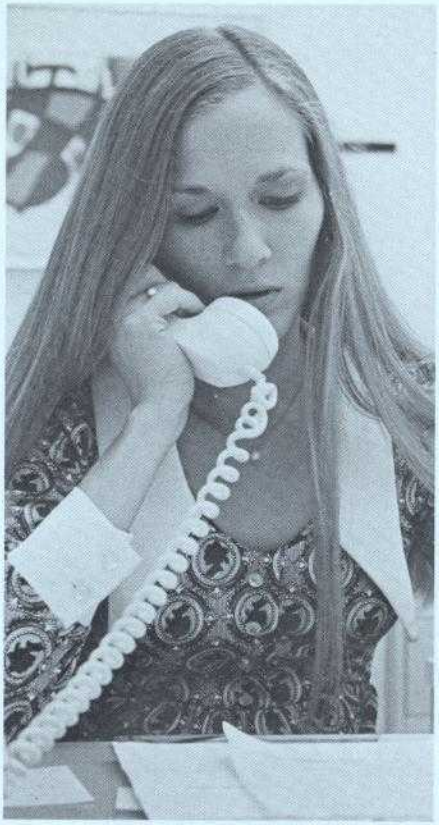
The Pin Yin method should be used in all high schools and colleges teaching Chinese in the United States. Although there is some overlapping among the three methods—i.e., if you know one system you can sometimes recognize romanizations in the other systems—there is reason for concern. Just a small variation in transliteration could lead to misunderstandings in critical situations. This possibility alone gives an urgency for changes in the teaching of Chinese in the United States. The least that the teachers of Chinese should do, is to give students references about the Pin Yin system.

■ *Professor Shieh was born in Shanghai, and received his high school education in Peking before coming to this country in 1947. He currently teaches economics at Prince George's County, Md., Community College. He is the author of* A Glimpse of the Chinese Language: Peking's Language Reforms, *a book dealing with China's need for better communications as it enters a new era of international activity.*

Author of Cervantes visits COMSAT

The American Theatre recently opened its inaugural season at L'Enfant Plaza, with Norman Corwin's *Cervantes*. In the photo above, Mr. Corwin (left), a long-time friend of Comsat's Assistant Vice-President for Public Information Matthew Gordon discusses the coming season.

COMSAT EMPLOYEE NEWS



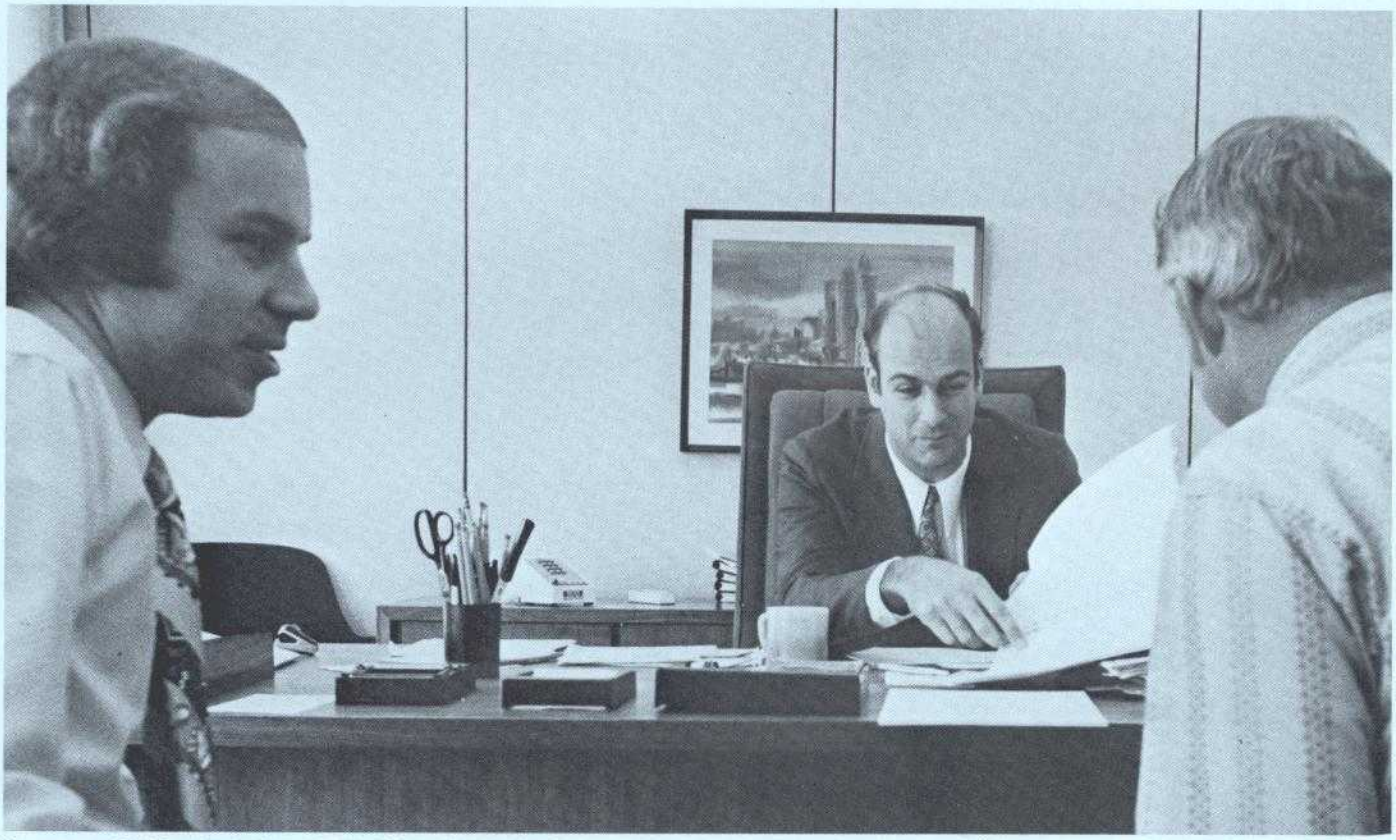
Employment clerk Joan Fink discusses a job application.

Personnel office provides varied employee services

The office of the Director of Personnel is responsible for formulating and recommending manpower policy; and advises, guides, and counsels Management in the implementation of that policy with the objective of ensuring effective utilization of the Corporation's human resources.

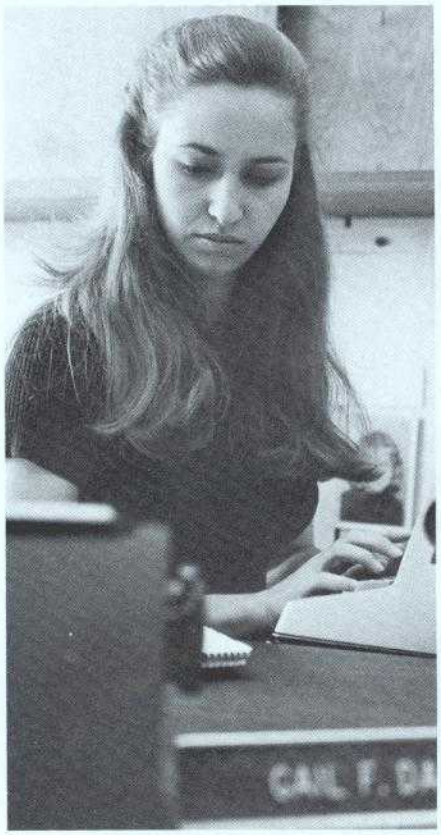
Among its responsibilities are personnel services, salary and wage administration, employee benefits, health services, staffing, human resources development, and minority employment opportunity programs.

Personnel Services Advisor James R. Dunn reviews a document.

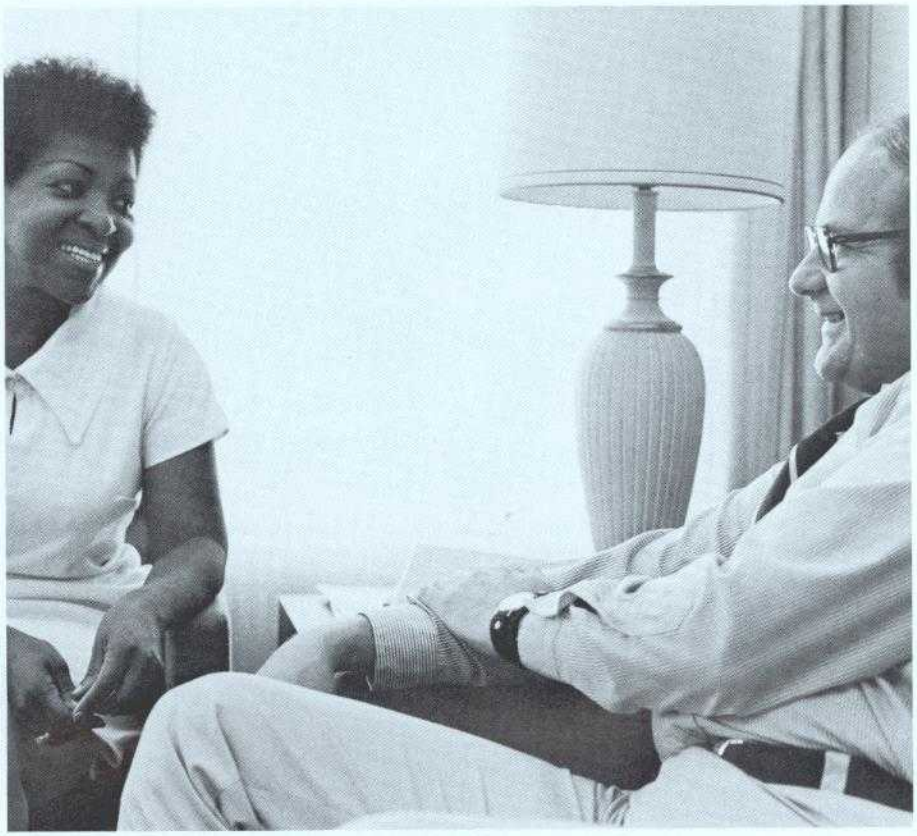


Personnel Director David E. Nye (center) consults with Benefits Administrator Robert A. Dahlgren (left) and Compensation Advisor Jack L. Rutter.

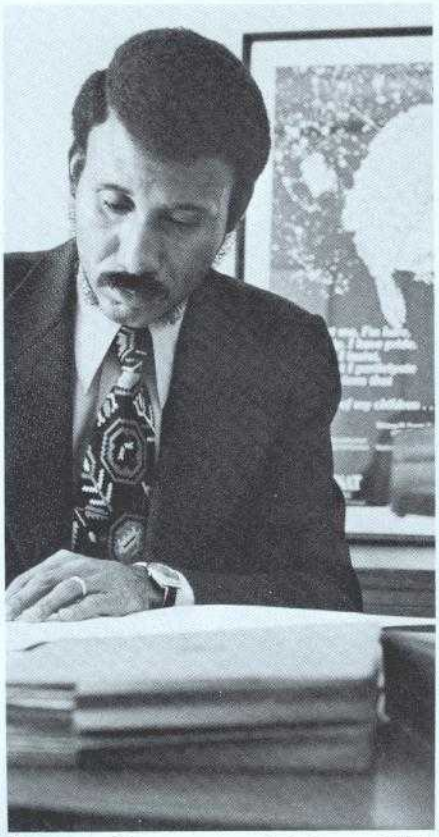
PHOTOS BY J. T. McKENNA AND BILL MEGNA



Secretary Gail Davis types a letter for Mr. Nye.

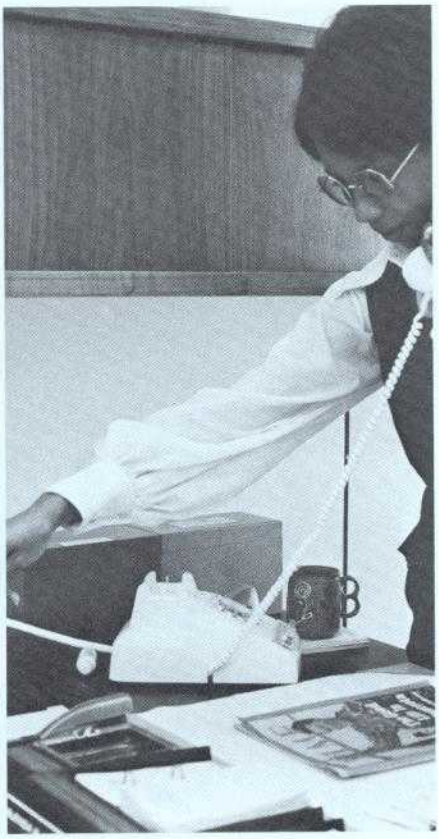


Assistant Personnel Director Donald J. Chontos confers with Headquarters Nurse Hazeline Durant.

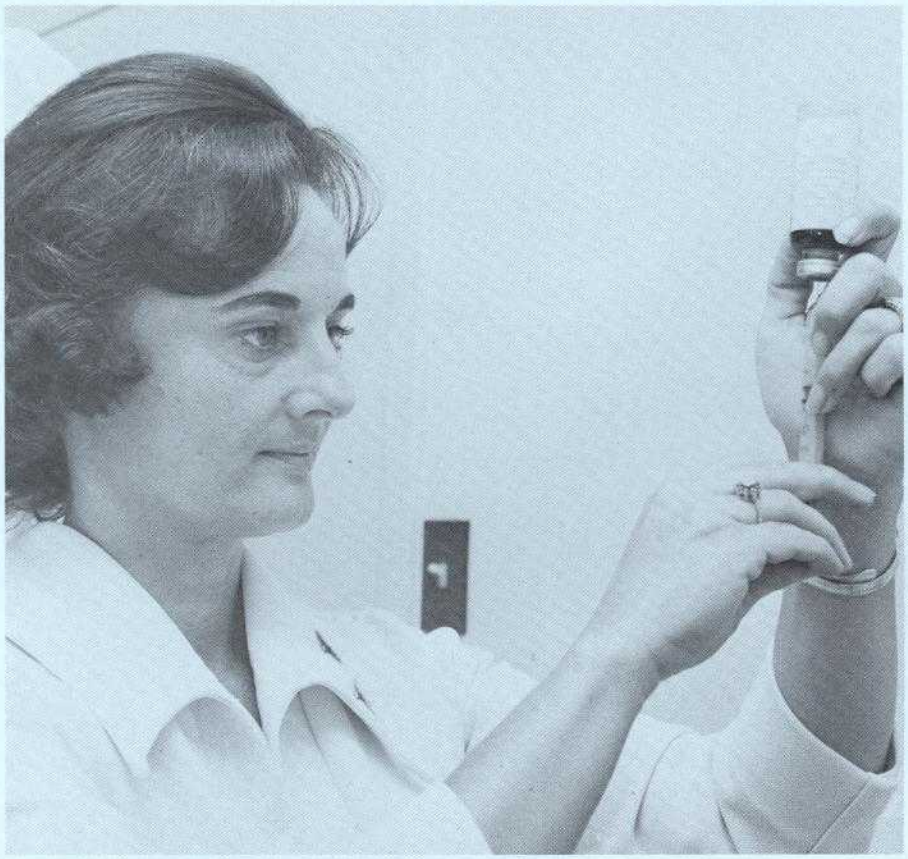


Human Resources Advisor William B. Lockett prepares a report.

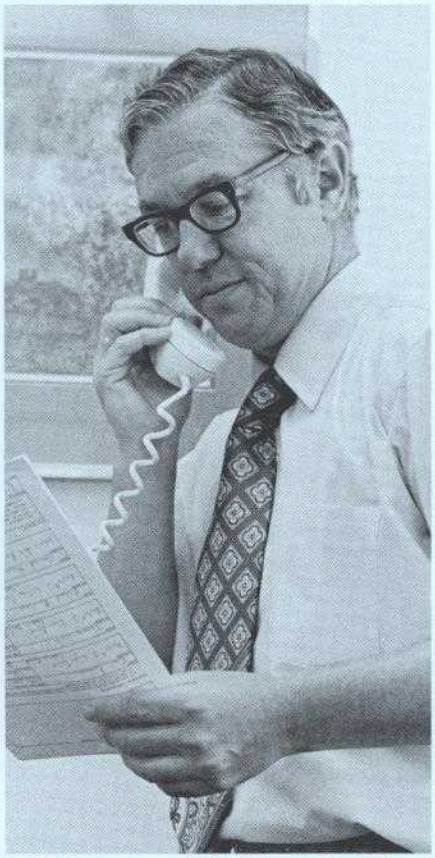
Personnel clerks Patricia Cramer (front) and Rignor Blodgett (rear) aid secretary Cheryl Braham.



Secretary Glenda Cooper answers a telephone inquiry.



Labs Nurse Betty Mowen prepares to administer a shot.



Labs Personnel Manager Lynford Russell verifies job data.

Staffing Administrator Cindy Watson (left) and Personnel clerk Helen Dixon examine position summaries.

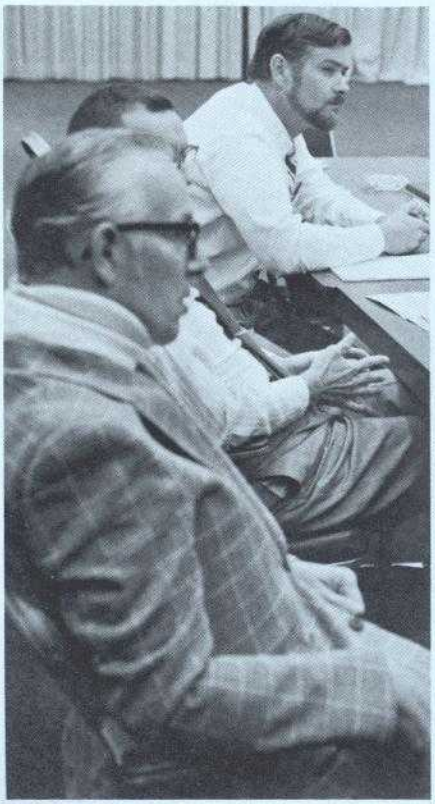
Personnel clerk Judy Martin takes an ID-card picture.

Station managers assemble at Headquarters

COMSAT's earth station managers recently convened at Headquarters for their annual five-day meeting.

Among the managers on hand were Don Fifield, Andover; Harry Gross, Bartlett; Wally Lauterbach, Brewster; Lee Jondahl, Cayey; Bill Carroll, Etam; John Scroggs, Jamesburg; and Glenn Vinquist, Paumalu.

Wally Lauterbach (left) and Glenn Vinquist review current Credit Union procedures with Assistant Treasurer Marie Hixon.



John Scroggs, Bill Carroll, and Lee Jondahl (left to right) listen to a presentation.

Round table discussions on a variety of subjects highlighted the meeting.

PHOTOS BY J. T. McKENNA

"Big Stinky" in action.

At Jamesburg

By Warren E. Neu

During the past several months we have experienced quite a turnover in personnel. A number of our staff have resigned to assume positions with other corporations.

As a result, there are several new faces around the station these days. George Furford, Dennis Hill, and Larry McKenna joined us from Bartlett. Andover's Bill Hamilton and Charlie Kraft from Paumalu are also now with us.

In addition, John Pate, a local resident, who worked with Del Monte Aviation as a communications specialist is our newest employee. To them we say, "Welcome Aboard."

Jim Harding reversed the trend, however, as he was recently transferred and promoted to facilities supervisor at Brewster. Jamesburg wishes him well in his new assignment.

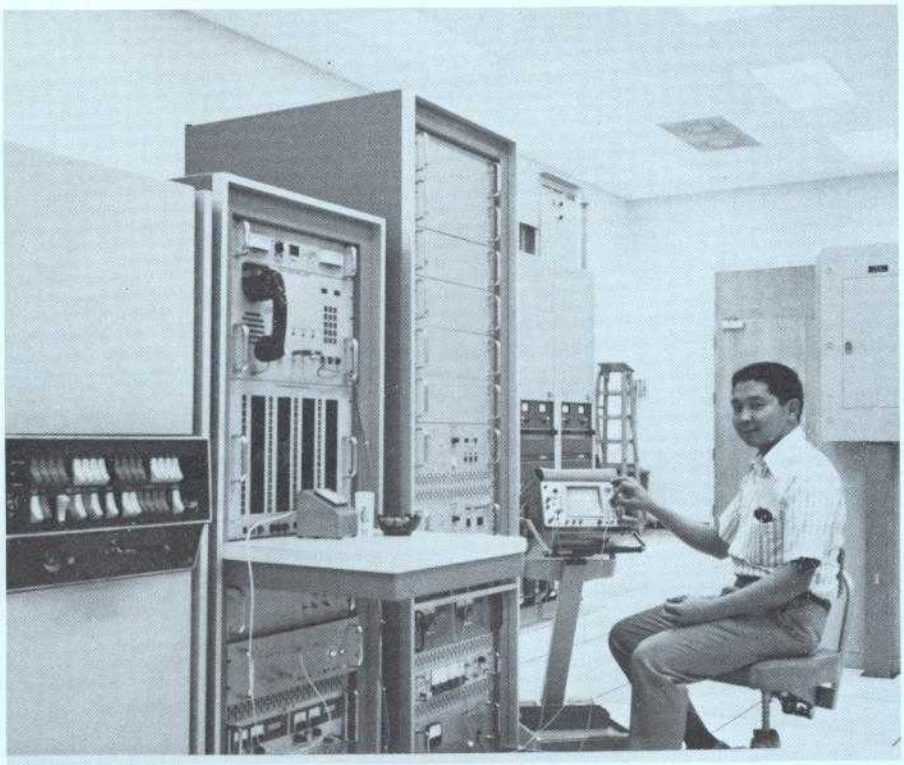
Enough about people, though! This summer we have been plagued with swarms of yellow jackets. They have not hesitated to let us know that they are around.

In an attempt to "control" their activities we developed what we call the "Big Stinky" yellow jacket trap.

The theory was to let the beasts drown themselves in honey.

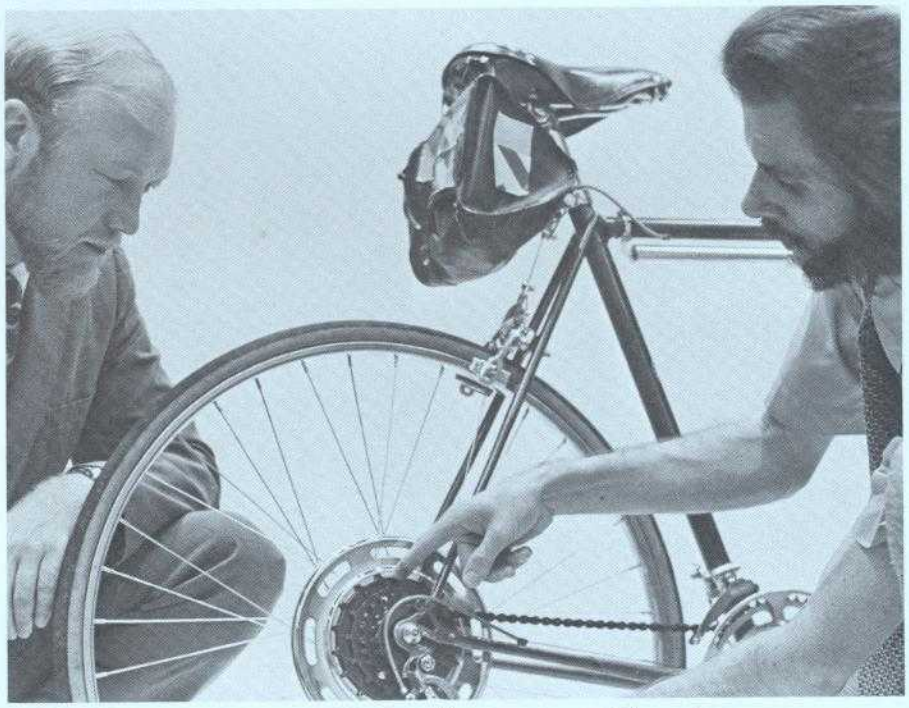
We really don't know if "Big Stinky" or the change in weather has been responsible but the yellow jackets have finally moved on.

■ *Mr. Neu is administrator of the Jamesburg Earth Station.*



Paumalu's Mr. SPEC in action

Senior technician Tom Ota is responsible for the experimental SPEC (Speech Predictive Encoding Communications System) equipment now being tested at Paumalu. In the photo above, Tom places a test call to Brewster via a Pacific INTELSAT IV satellite.



CEA Homeowners Club discusses bicycles

Acting CEA Homeowners Club Chairman Neil Helm (left) listens as John Hannsen, COMSAT's 10-speed bike expert, explains a gear assembly. Mr. Hannsen discussed today's high-speed bikes at a recent lunchtime meeting.

All-Star team members are (standing, left to right) Dennis Podgurski, Bud Swanger, Joe Jankowski, John Bennett, John Sowers, Chick Dahl, George Meadows, Pete Carlton, and John Husted; and (kneeling, left to right) Manager Carol Louthan, Bill Burch, Frank Scotto, John McClanahan, Marianne Merrihew, and Prad Kaul.

PHOTO BY BILL MEGNA

League champions are (standing, left to right) Bill Windell, Al Stapp, Bob Redick, Roger Carlson, Bob Gruner, Harold Mikeljohn, Dave Bayne, Don Wentworth, Terry Morgan; and (kneeling, left to right) Bettie Wentworth, Edna Carlson, Rocky Lee, Art Meyers, Fred Seaman, C. T. Bowman, Marie Curtis, and Jesse Thompson.

PHOTO BY BILL MEGNA

Life at the Labs

By Carol Louthan

Those late summer and early fall vacations have been in full swing with many Labs personnel traveling south to the beaches and north to the mountains.

Judy and Ernie Martin recently returned from a week in Miami visiting friends and relatives. Claudette Tucker and her son, Jeff, spent a week with relatives in Augusta, Georgia, then went on to Hilton Head and Myrtle Beach, S. C., for a few extra days. My son, Christopher, decided recently that we were going to take a motor home trip to Myrtle Beach also. We parked on the beach and just soaked up the sun for four days. Bill Fallon and family recently spent a week in the Pocono Mountains of Pennsylvania. It proved to be a nice "just-before-school" vacation for all.

Congratulations to John and Cathy Talcott on the birth of their daughter, Melody Marie. Miss Talcott arrived on July 16 at the Washington Hospital Center and weighed in at 7 pounds and 4 ounces.

Understand that Steve Motusicky will be returning to the Labs after his leave of absence for surgery. It will be nice to have Steve's smile around us once again.

Special congratulations to Terry Morgan, a new Labs employee, on his engagement to Denise Amelia Medairy of Damascus, Md. Terry and Denise will be married on November 17.

With Fall rapidly approaching, COMSAT Laboratories Slow-Pitch Softball League finished its season with a "BANG."

On August 23 the Slow-Pitch Champs, Windell's Wizkids, met the Labs All-Stars. After a slow start, and 12 innings, the All-Stars came out on top, 15 to 9. Winning pitcher was John Husted.

A very special trophy was presented to the only female to make the All-Star team. Marianne Merrihew received a special award for her outstanding defensive play, a perfect catch in the playoff game against All-Star homerun hitter George Meadows. Congratulations to Marianne.

A "super" Labs All-Star team then played in local restaurateur George Hunt's Melody Inn Softball Tournament in early September. When the dust had finally settled, our team finished in fourth place. A tough loss to IBM (9 to 6), after an exciting 10 to 9 victory over the National Bureau of Standards, concluded the season for the team.

After softball, there's bowling; and the 1973-74 season began on September 4 at Fairlanes in Gaithersburg, Md. With eight very evenly-matched teams, it should prove to be a very exciting season. League officers for the year are Hank Mueller, president; George Brown, vice-president; and Carol Louthan, secretary-treasurer.

■ *Mrs. Louthan is a secretary at the* COMSAT *Laboratories.*

The Plaza scene

By Joyce Ann Przelenski

Those cool breezes are finally with us again and hopefully we have had our last heat wave of the season. However, with those high temperatures went the last official holiday weekend of the summer—Labor Day. Many of our Plaza people took advantage of the weather and did some traveling.

Toni Loomis, General Counsel, vacationed in New Hampshire. Toni says the golfing and beaches were just great and there was no pollution.

Ken Brooks, Administrative Services, vacationed for a week in Canada.

Pat Irby, Corporate Affairs, and her husband spent two weeks visiting his relatives in and around Houston, Texas. They also managed to visit Mexico, and on their return home stopped to paint the town red in the French Quarter of New Orleans.

Jackie Wakeling, Corporate Affairs, and Winnie Hall, Office of Chief Scientist, recently spent a "Yoga" weekend at nearby Great Falls. The weekend involved getting up at 5:30 a.m., meditating and eating organic foods. Sounds interesting.

Linda Kortbawi, Finance, and her husband vacationed in the Pocono Mountains of Pennsylvania.

Alan Kasper and Del Bergere, General Counsel, vacationed in Cape Cod.

Wally Sliter, COMSAT General, and sister Betsy spent 17 days touring the Scandinavian countries and even visited Leningrad, Russia.

Mary Hilliard, Finance, spent three weeks vacationing in our Southern states finishing her trip in Florida where she met Jeannie Marnock, also of Finance.

Elaine Prech, Finance, and husband Jim have recently returned from their trip to England. It was a trip home to Manchester for Elaine and Jim's introduction to her family. They also visited York and London.

A farewell party was held for Connie Ciesielski, Finance, at the Key Bridge Marriott Motel on September 7. Connie is going to stay home and spend her time watering her plants.

Cindy Watson, Personnel, became the bride of Jim Zofcin on September 8.

Gail Davis, Personnel and John McManus, Finance recently announced their engagement. The wedding will take place November 24.

Congratulations to:

- Prissy Martin, Administrative Services, on the birth of her first child, Derek, born on August 10.
- Loretta Burgess, Marketing, on the birth of her son, Vince Corey, on August 7.
- The Mike Stalbachs, Finance, on the birth of their first child, Jennifer Beth, born on August 27.
- The Dennis Fruhwirths, Finance, on the birth of their son, Steven Michael, born on July 6.
- Mr. and Mrs. Charles K. Brooks (Nellie, INTELSAT Secretariat) the proud grandparents of their first grandchild, Alexander Brooks Anderson, born on August 7.
- Lou and Barbara Early, Corporate Affairs, also grandparents for the first time. Heather Lynn, born on September 1 in Cheshire, England, arrived home recently.

The softball season is over. Although the Tigerettes made it to the playoffs, the girls lost in the finals to Pepco by the score of 11 to 18. The team finished the season with seven wins, four losses and three games called because of rain.

■ *Miss Przelenski is a senior MT/ST operator in the office of the General Counsel.*

PHOTO BY J. T. McKENNA

Red Cross Gallon Club members honored

COMSAT President Dr. Joseph V. Charyk (third from the left), and Personnel Director David S. Nye (fourth from the left) join Nurse Hazeline Durant and members of the Red Cross Gallon Club before a luncheon to celebrate the successful conclusion of the Corporation's 1973 blood drive. For the fourth consecutive year over 100 employees donated enough of their blood to better the quota established by the Washington, D. C. Red Cross Blood Bank.

Buon Giorno

BY MRS. DOROTHY RIDDLE

For the first time ever, The COMSAT News *has received an article about our employees at the TT&C station located at Fucino, Italy. Mrs. Riddle promises more news in the future—The Editor.*

Buon Giorno from Fucino, Italy!

There are three COMSAT employees working at the Fucino TT&C Station. Micheal Hoehne is our engineer, Donald Pavalac is our shift supervisor, and Darrell Riddle is our senior technician.

We all live in Avezzano with our families and as a matter of fact Mike and Don have married Italian girls.

We were very happy to receive the vaccine for our cholera shots sent to us recently from Headquarters. We were all quickly inoculated against cholera. We are very fortunate that we haven't had any cases of the disease in our area.

We have all had wonderful vacations this year. Mike and his family went back to the States for their first visit in five years. Don and his family went to Spain, Portugal, Andorra, and France. Darrell and I toured France, England, Belgium, Holland, Germany, and Austria.

Arrivederci until next time.

■ *Mrs. Riddle is the wife of senior technician Darrell Riddle.*

5-year awards

The following personnel received five-year service awards during September and October.

Administrative Services: Roland L. Banks Jr., William C. Barr, and Theresa B. Whitehead.

Brewster: Donald D. Allen.

COMSAT General: William D. Hudgins, Lawrence H. Westerlund, and Paul M. Winchester.

Corporate Affairs: Patricia A. Irby.

Finance: James A. Hall, Hasin A. Hashmi, and Reginald C. Westlake.

International System Division: Samuel F. McNeil Jr., Marvin L. Rosenbluth, and John L. Van Alstyne.

Laboratories: Joan H. Brereton, Joseph G. Jerome, Jr., John D. Kiesling, William Korvin, Ernesto R. Martin, Dennis J. Podgurski, John H. Reynolds, Paul R. Schrantz, Istvan Szabo, and Samuel A. Wax.

Paumalu: Glenn M. Vinquist.

COMSAT Senior Vice President G. P. Sampson (center) presents the winners' trophy to (left to right) John Welch, Marv Bowser, Bill Wood, and Dave Burks.

PHOTO BY ALLAN GALFUND

Bartlett prepares for RCA turnover in the fall

By Harry G. Gross

The big, although far from good, news at Bartlett this fall is the impending transfer of earth station ownership from COMSAT to RCA Alascom. With the visit of Dr. Robert C. Barthle, Director, U.S. Systems Management, and Donald J. Chontos, Assistant Director, Personnel, at the end of August, the suspense was finally lifted and the COMSAT plans to release the station to RCA Alascom were unveiled.

This action follows the Federal Communications Commission (FCC) domestic satellite policy, which encouraged the transfer of the Alaska-continental United States traffic to an appropriate domestic system, and established RCA as the carrier for message toll service between Alaska and the lower 48. The FCC made clear in its September 13 order that the station must be sold when it said "COMSAT has agreed to sell the Bartlett Earth Station to RCA Alascom—such transfer to be effective when the RCA interim system commences operation, subject to the Commission's consent to the assignment of license."

Already four of our personnel have transferred to other stations to fill existing vacancies. George Furford, Dennis Hill, and Larry McKenna went to Jamesburg, while Jerry Hart relocated to Etam. Of the remaining personnel, seven will remain at the earth station and transfer to RCA. Three others, Merwyn Bartlett, Merle Albert, and I, will return to Headquarters for reassignment at a later date.

"Turnover date" is tentatively scheduled for November 15. It is with regret that we see this action taking place. Talkeetna has been an enjoyable place to live, and many people have established roots here, as evidenced by the number remaining. For those of us who will be leaving we shall miss the warm and friendly people of this as yet almost unspoiled bush village.

However, times are changing and Talkeetna is becoming modernized even to the tune of proposed zoning ordinances. With "Evil Alice" selling the Talkeetna Motel and Tepee Lounge, it just won't be the same as the "good old days."

■ *Mr. Gross is manager at the Bartlett Earth Station.*

Headquarters wins team trophy for second year

The Headquarters team of Marv Bowser, Dave Burks, John Welch, and Bill Wood recently won the Fourth Annual International System Division Golf Tournament with a team score of 289.

The winning foursome, shooting the lowest team score ever recorded in any tournament, finished five strokes ahead of Paumalu's Cass Corpuz, Les Goya, Stan Holt, and Paul Motoyama.

A total of seven teams, including the winners, representing Andover, Etam, Jamesburg, Paumalu and the West Coast Project Office joined in this year's play.

For the first time, only those players not on the winning team were eligible for low gross and net honors. As a result of this new ruling, Paumalu's Cass Corpuz took low gross honors of 78, while Les Goya, also of Paumalu, turned in a low net round of 79-7-72.

COMSAT NEWS

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Photo by Allan Galfund

COMSAT President Charyk unveils new COMSAT flag.

News in Brief

Signatories elect Charyk Chairman

With 67 of its 83 Signatories represented, the INTELSAT Meeting of Signatories held its first meeting and elected COMSAT's President Charyk Meeting Chairman.

Management Services Contract approved

A management services contract under which Comsat will provide technical and operational support to INTELSAT until February 1979 was approved by the Board of Governors at its Canary Islands meeting in October.

Satellite slots limited

Radio frequencies and the geostationary satellite orbit are limited natural resources and must be used efficiently and economically, ITU tells its conferees.

Solar energy for earth application

COMSAT Lab's Bargellini tells meeting of scientists and engineers in Genoa, Italy, they are well qualified to contribute to the solution of the energy problem and that large-scale production of inexpensive solar cells has earthly application.

Five years support to manned space flight

With the last of the three Skylab flights now on its projected 80-plus-days mission, the global system of communications satellites and earth stations managed by COMSAT concludes five years of support to the NASA Tracking Network.

Satellite TV's biggest month

COMSAT Operations Center registers all-time high in number of television transmissions, receptions and total stations involved in October.

Fund drive a success

COMSAT 1973 United Way Drive stated the "best yet" with the raising of more than $30,000 for local charities. Cooperation among COMSAT and Plaza occupants considered excellent.

Net income and dividends up

COMSAT reported its net income up from the previous year's third-quarter 65 cents to 98 cents a share, and the Board of Directors declares a three-cent per share quarterly increase to 17 cents.

New INTELSAT IV ready for launch

The sixth INTELSAT IV satellite is presently scheduled for launch in January joining five other IV's now in orbit. The new satellite is planned as a spare satellite in the Pacific Ocean area.

Eight antennas added in 1973

87 antennas at 69 earth station sites in 52 countries were operational in the global system at the end of 1973, an increase of 8 antennas over 1972.

Cover.
As Apollo 8 Astronauts Borman, Lovell and Anders orbited the moon on Christmas Eve, 1968—man's first approach to the lunar planet—the crew beamed its message of good will to earth, a quarter of a million miles away.

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Matthew Gordon, Assistant Vice President for Public Information
John J. Peterson, Editor

Delegates to the Meeting of Signatories are given a tour of Spacecraft Technical Control Center by Dennis V. Neill, Assistant Vice President for INTELSAT Satellite Programs.

Signatories elect COMSAT's Charyk Meeting Chairman

By Stephen D. Smoke

With 67 of its 83 Signatories represented, the Intelsat Meeting of Signatories elected Comsat's President Dr. J. V. Charyk Chairman of its first meeting held in Metropolitan Washington November 12-15. Dr. Charyk was elected by acclamation of the Representatives, as was the Deputy Chairman, Mr. A. R. K. al-Ghunaim of Kuwait.

The Meeting of Signatories also elected five Vice Chairmen, one from each of the International Telecommunication Union (ITU) regions throughout the world: Mr. I. Gilson of Brazil (Region A, The Americas); Mr. G. V. C. Pedersen of Denmark (Region B, Western Europe); Mr. P. Vasiljevic of Yugoslavia (Region C, Eastern Europe and Northern Asia); Mr. H. Z. E. Ramogo of Kenya (Region D, Africa); and Mr. Y. Kanno of Japan (Region E, Asia and Australasia).

Following the election of officers the Meeting of Signatories took action on a number of matters.

The investment share of the thirteenth country in descending order of investment, which currently stands at 1.14 percent, was reaffirmed as the minimum investment share which entitles a country or group of countries to representation on the Intelsat Board of Governors until determined again by the Meeting of Signatories at its next meeting.

The report of the Board of Governors concerning the long term program of Intelsat, which included a section on the implementation of the Intelsat IV-A program, was considered and adopted.

The Intelsat IV-A program calls for the procurement of three modified Intelsat IV satellites to provide services commencing in the 1975-76 time frame. The Intelsat IV-A satellite, estimated to have a capacity of 12,500 channels, plus one transponder for television and one for SPADE, the demand assignment service, will nearly double the Intelsat IV capacity.

General rules were established for space segment utilization charges which include provisions that such charges shall be non-discriminatory, and that they shall make an appropriate contribution to overall revenue requirements.

General rules were adopted for allotment of space segment capacity which provide that allotments be made in accordance with relevant provisions of the Agreement, that

Larry Covert (left), Manager, Operations Center, briefs INTELSAT Signatories on the role of the Operations Center in the communications satellite network .

Photos by J. T. McKenna

they insure efficient and non-discriminatory use of the space segment, and that there is no harmful interference with the efficient operation of the space segment.

General rules were also adopted for access of earth stations to the space segment which provide that Signatories and non-Signatories shall have non-discriminatory access, and that mandatory technical and performance characteristics prescribed by the Board of Governors are met, except where the Board of Governors may prescribe several characteristics on a case-by-case basis.

In accordance with the terms of the definitive Agreements, the Meeting of Signatories prepared a report to the Parties which will be considered by the Assembly of Parties when it convenes in Washington, D.C. February 4–8, 1974.

Under the definitive Agreements which entered into force on February 12, 1973, the structure of INTELSAT consists of the Assembly of Parties (governments party to the intergovernmental Agreement), the Meeting of Signatories (telecommunications entities designated by the Parties), the Board of Governors (responsible for the development and operation of the global satellite system), and an Executive Organ, headed by the Secretary General, responsible to the Board of Governors.

The Meeting of Signatories was to convene within nine months of entry into force of the definitive Agreements, and thereafter once in each calendar year.

Dr. Joseph V. Charyk, President of COMSAT, third from left, and Mr. A. R. K. al-Ghunaim of Kuwait, second from right, were elected Chairman and Deputy Chairman, respectively, of the Meeting of Signatories.

The Steering Committee of the Meeting of Signatories was comprised of the Chairman, Deputy Chairman, the five Vice Chairmen, and the Chairman and Vice Chairman of the INTELSAT Board of Governors.

The next meeting of the Meeting of Signatories is scheduled for April 1–5 in Acapulco, Mexico. The invitation to meet in Mexico was extended by Mr. Carlos Núñez, a delegate of Mexico to the Meeting of Signatories and a former chairman of the Interim Communications Satellite Committee.

The first meeting of the Assembly of Parties is scheduled for February 4–8, 1974, in Washington, D.C., and every two years thereafter, unless determined otherwise from meeting to meeting.

Sixty-seven of the 83 Signatories to the INTELSAT Operating Agreement were represented at the first meeting of Meeting of Signatories held at the Rosslyn Ramada Inn November 12-15.

Energy crisis challenge to space scientists says Bargellini

Some four hundred scientists and engineers from six countries heard COMSAT Laboratories' Senior Scientist Dr. Pier L. Bargellini discuss energy consumption and its conversion prospects during the 21st International Meeting of Communications and Transports held recently in Genoa, Italy.

According to Bargellini, the energy crisis constitutes a real menace unless solutions are found which will disclose new energy sources yet untapped, or will lead to the large scale economical exploitation of sources whose use has been limited until the present for reasons of inadequate efficiency or excessive cost.

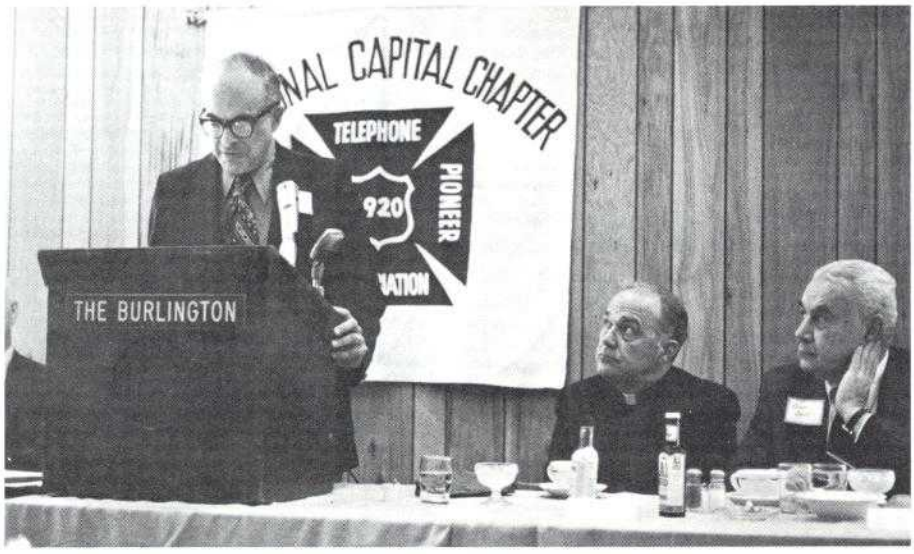
"However," he continues, "space scientists and engineers find themselves well qualified to contribute to the solution of the energy problem because all spacecraft, ranging from vehicles orbiting the earth at various altitudes to vehicles designed for cis- and translunar missions, moon and planet landings, and ultimately those intended for the exploration of deep space, require exotic energy sources."

Pointing out that electrical power is essential on all spacecraft, manned and unmanned, he cites four major categories of energy source: chemical, solar, nuclear and others, which category encompasses a variety of energy sources from compressed gases to kinetic and radiant energy.

"Until now," says Bargellini, "the use of solar energy has been preponderant and will continue to play a major role in space technology. . . . Solar cells have been the most frequently used devices for the conversion of solar into electrical energy in space applications. Maximum power level requirements in unmanned missions such as scientific, weather, earth resources and communications satellites have grown considerably but have not exceeded a few hundred watts. . . . Manned missions, on the other hand, have required higher power (of the order of several kilowatts) but have been characterized by less stringent requirements in regard to lifetime."

Photovoltaic converters, or solar cells, are the most common and successfully employed forms of energy conversion devices based on 15 years of experience with various forms of energy converters, concludes Bargellini. "Recent developments at COMSAT Laboratories have produced silicon solar cells with conversion efficiency greater than that of previously available cells. These developments, coupled to advances in rechargeable batteries, also made at COMSAT Labs, are bound to influence the possible use of terrestrial solar power plants installed in individual homes and buildings. This form of energy conversion appears suitable for widespread practical applications as soon as processes for the large scale production of inexpensive solar cells, on the one hand, and rechargeable batteries on the other, may become available."

[The complete text of Dr. Bargellini's talk may be obtained from the Public Information Office.]



FCC's Strassburg retires

Bernard Strassburg, FCC Common Carrier Bureau Chief, announces his retirement from federal service effective the end of the year. Mr. Strassburg made the announcement at a recent luncheon meeting of the Independent Telephone Pioneers Association. At the head table with Mr. Strassburg are Father John Hannon, ITPA Chaplain, and Matthew Gordon, COMSAT Assistant Vice President for Public Information

INTELSAT IV F-8 being readied for launch

The sixth satellite in the INTELSAT IV series of communications satellites was received at Cape Canaveral about mid-December and is presently being assembled for launch. Present plans call for the spacecraft to be placed in synchronous equatorial orbit in late January.

The next INTELSAT IV will join five other IV's presently in orbit; three are over the Atlantic Ocean, one is over the Pacific and one over the Indian Ocean. In addition, an INTELSAT III over the Pacific and another III over the Indian Ocean are available as back-ups for the other satellites.

As COMSAT NEWS went to press, the new satellite was to serve as a spare in orbit over the Pacific Ocean in keeping with the provisions of the INTELSAT system plan. That plan requires one spare satellite to be placed in orbit over each of the three ocean areas.

The Atlas-Centaur which will boost the INTELSAT IV into orbit is already on the launch pad at Complex 36.

Board of Governors meets in Canary Islands

The fifth meeting of the INTELSAT Board of Governors was held October 17–25 at the San Felipe Hotel on the island of Tenerife in the Canaries. The meeting was hosted by Compania Telefonica Nacional de España, the Spanish Signatory.

U.S. representation to the meeting was headed by Richard R. Colino, Assistant Vice President, International System Division, and included Robert Kinzie, Director of INTELSAT Affairs, and Joe N. Pelton, Manager, Board of Governors Affairs Department.

The Manager's delegation was headed by George P. Sampson, Senior Vice President, International System Division, and was comprised of Clarence Blackwell, Robert D. Bourne, Sidney Browne, Peter Ferrendino, Lewis Meyer, Emeric Podraczky, Carl Reber, Martin Votaw, Reginald Westlake and Edward Wright.

Actions taken by the Board included the agreement to an Executive Organ structure consisting of three divisions for Finance, Technical/Operations, and Administration/Conference Affairs. A Legal Advisor, a Public Relations Advisor and an Executive Assistant were added to the Office of the Secretary General. The Board reviewed a general outline of the terms and conditions for employment of the Executive Organ and indicated agreement subject to a detailed review of the benefits program. It approved the Management Services Contract under which COMSAT will provide technical and operational services to INTELSAT. The contract will continue in effect until February 12, 1979. The value of the contract over the five-year period could be as high as $100 million. It reduced the space segment utilization charge from $11,160 to $9,000 per unit per year, effective January 1, 1974, and established, on an experimental basis, a per minute charge for SPADE of 15 cents per occupied minute.

The Board approved two long term allotments of INTELSAT IV global beam transponders, one in the Pacific INTELSAT IV to COMSAT for U.S. Mainland-to-Hawaii domestic public telecommunications at a 360 unit charge (subject to FCC approval), and a spare capacity equivalent to a global beam transponder to Algeria with the provision that this service might be preempted to carry out restoration service if required, with a five-year commitment. Algeria, designing its earth segment with the flexibility to operate with either the Atlantic or Indian Ocean INTELSAT IV satellites, accepted the proviso, and a rate of $1 million per year was adopted by the Board as an appropriate rate for the preemptible domestic service.

It also retained the overseas telecommunications facilities restoration rate at $31 per day while retaining the regular schedule of occasional-use rates under CCITT guidelines, but with a reduction in proportion to the new 1974 utilization charge.

Other actions of the Board included approval of remodeling and equipping the new INTELSAT headquarters; development of a detailed timetable and outline for the study of Permanent Management Arrangements; a discussion of INTELSAT's relationship with the Intergovernmental Maritime Consultative Committee (IMCO); an agreement that TDMA field trials be undertaken on the basis of individual Signatory funding if there is sufficient interest in conducting trials on such a basis; the approval of technical and economic procedures for intersystem coordination with other satellite systems; the initiation of coordination of the COMSAT Marisat System, as well as four U.S. domestic systems (COMSAT/AT&T, GSAT/NSS, American Satellite and Western Union); the approval of a $35,000 R&D contract for measuring cross-polarization characteristics of earth stations, one in the Antarctic and one in Peking, China, for access to the INTELSAT system, as well as granting approval for access to the Dehra Dun, India, and Umm Horaz, Sudan, Earth Stations.

ost a dinner for ITU representatives from right: Mr. Liu Yuan, General Sampson, s. Sampson, Mr. Tang Wei-Ming and Mr. Representatives to the INTELSAT Board of Governors tour Lanzarote Island during the recent meeting in the Canary Islands. Pictured above, Senior Vice President George P. Sampson of COMSAT's International System Division, and Mr. Abdel K. Bairi, representing the Arab Group, ascend Mount Fuego by camel.

For relaxation during the week-long meetings, the Board members and delegates toured the other Canary Islands which included visits to the Las Canadas volcanic crater; the base of Mount El-Tiende; Gran Canaria Island for a look at the modern Las Palmas Earth Station, the expanding Maspalomos hotel and apartment complex with an overnight stay in Las Palmas, capital of Gran Canaria.

Staff support for the meeting was provided by COMSAT personnel, the INTELSAT Secretariat and C.T.N.E.

[The preceding story is based on material submitted by Mr. Pelton.]

Energy crisis challenge to space scientists says Bargellini

Some four hundred scientists and engineers from six countries heard COMSAT Laboratories' Senior Scientist Dr. Pier L. Bargellini discuss energy consumption and its conversion prospects during the 21st International Meeting of Communications

award

Matthew Gordon, Assistant Vice President for Public Information representing COMSAT, accepts Financial World's award in the communications industry category for the COMSAT 1972 Annual Report. Making the presentation for second place of all the reports in the industry are the magazine's publisher, Robert I. Weingarten (center), and editor in chief, Alfred H. Kingon. The Financial World's Annual Awards Banquet was held October 31 at the New York Hilton Hotel.

There was fun, too

A number of special events contributed to the success of the Meeting of Signatories.

On Monday evening, Dr. and Mrs. Charyk hosted a reception in the COMSAT Building for delegates to the meeting, embassy officials, government representatives, COMSAT personnel and their wives. About 300 people attended.

The "raw bar" was the hit of the evening with entertainment by and dancing to Sidney's Orchestra.

On Wednesday, a day off, the delegates visited the Spacecraft Technical Control Center and the Operations Center as guests of General Sampson and Bill Wood. After lunch at the Labs dining room, Neil Helm and Pier Bargellini took the delegates on a tour of the Laboratories.

Also on Wednesday, Mrs. Charyk and Mrs. Colino hosted wives of the delegates on a visit to Mt. Vernon, followed by shopping in Alexandria after luncheon at Collingwood-on-the-Potomac.

On Thursday, Mrs. Colino hosted the delegates' wives during a boat ride down the Potomac on *Le Bateau*, which included luncheon and a fashion show. Afterward, the guests were taken on a tour of Old Towne Alexandria.

Satellite orbits limited natural resources ITU conference notes

The responsibilities of the International Frequency Registration Board (IFRB) with respect to the utilization of the geostationary orbit were defined at the recent International Telecommunications Plenipotentiary Conference held in Spain.

The definition of responsibilities was the handiwork of one of nine committees assigned specific areas to facilitate the work of the conference attendance of some 135 countries and 630 official delegates. Committee reports were submitted to the Plenary Sessions for review and approval prior to the conclusion of the six-week conference.

To assist the committees, ad hoc working groups were selected. COMSAT's Irving Goldstein, Director of the European Office, together with Mr. James Ogle of the Department of Commerce, and Mr. Merle Glunt of the FCC constituted the working group treating with the utilization of the geostationary orbit.

The final text submitted by the working group, and approved in Plenary, provided for IFRB responsibility for the "orderly recording of the positions assigned by countries to geostationary satellites" and authority to "perform any additional duties concerned with the assignment and utilization of the geostationary satellite orbit, in accordance with the procedures provided for the Radio Regulations and as prescribed by a competent Conference of the Union. . . ."

Member countries, the approved text continued, are to "bear in mind that radio frequencies and the geostationary satellite orbit are limited natural resources, that they must be used efficiently and economically so that countries or groups of countries may have equitable access to both in conformity with the provisions of the Radio Regulations according to their needs and the technical facilities at their disposal."

One of the major actions taken by the Conference was the signing of its new Convention—as opposed to a constitutuion or charter—which is in two parts: "Basic Provisions" and "General Provisions." Based on a

Ambassador Jacob D. Beam, Chief of the US Delegation, greeting Mr. Kiu Cheng-Ching, Chief of the Delegation of the People's Republic of China, at the U.S. reception held on October 3 at the Holiday Inn Hotel, Torremolinos.

COMSAT's George and Mrs. Sampson host a dinner for ITU representatives from the People's Republic of China. Left to right: Mr. Liu Yuan, General Sampson, Mr. Hsu Ching-Mei, Irving Goldstein, Mrs. Sampson, Mr. Tang Wei-Ming and Mr. Liu Ping-Yuan. Mr. Liu Yuan, principal member of the Chinese delegation, visited COMSAT in July.

report submitted by a special study group set up in 1965, the form of a convention has been retained for the time being, with the "Basic Provisions" section designed for ultimate conversion into a constitution, if so decided at the next Plenipotentiary. Previously, the Convention was modified at each Plenipotentiary Conference.

Additional measures completed by the Conference included: discontinuance of the existence of Associate ITU Members and of territorial representation; institution of a system whereby any country not a member of the UN may become a member of the ITU by simple majority vote of the current members; and provision for the IFRB to be elected (one representative from each of the five ITU regions) at the Maritime World Administrative Radio Conference in 1974, and thereafter at each succeeding Plenipotentiary.

The 1973 Malaga-Torremolinos Conference opened in Spain in mid-September with more than 95 percent of the member nations represented, including the People's Republic of China for the first time. The U.S. Delegation numbered 24, consisting of Chief Delegate Ambassador Jacob D. Beam, assisted by three Alternate Chief Delegates (Thomas E. Nelson of the State Department, Robert E. Lee of the FCC, and Bromley Smith of the OTP), three Congressional Delegates (Congressmen James Harvey, Norman Lent and Lionel Van Deerlin), and Senior Advisor Raymond Waldmann of the State Department. The other U.S. Delegates included officials from the State Department, the FCC and other governmental agencies, and representatives from each of the U.S. international carriers, with COMSAT represented by Mr. Goldstein.

At the first Plenary Session, Sr. Leon Herrera Esteban, Director-General of the Spanish P&T, was elected Chairman, and subsequent Plenary Sessions reelected Mr. Mohamed Mili as Secretary-General and Mr. Richard E. Butler as Deputy Secretary-General of the Union. In addition, a new Administrative Council was elected and its membership raised from 29 countries to 36, with the United States retaining its seat.

The opening ceremony was presided over by H.R.H. Prince Don Juan Carlos de Borbón y Borbón of Spain, in the name of the Spanish Head of State, General Franco.

COMSAT took maximum advantage of the largest Telecommunications gathering in the world with various members of both COMSAT and COMSAT GENERAL visiting Torremolinos during the course of the Conference, among whom were Dr. J. V. Charyk and General George P. Sampson; Donald R. Owen, John B. Jenkins, John B. Gantt and Edward R. Slack of COMSAT GENERAL; and Hans J. Weiss of the Labs.

The ITU Plenipotentiary Conference, the supreme organ of the ITU (International Telecommunication Union) which itself is the oldest of the UN specialized agencies, has a current membership of 146 countries. The functions of the Plenipotentiary are to determine the general policy of the Union, establish the basis for its annual budgets, revise its Convention, and elect an Administrative Council (which meets annually in Geneva), a Secretary-General and a Deputy Secretary-General of the Union. The last Plenipotentiary was held in Montreux, Switzerland, in 1965, with subsequent Plenipotentiaries to take place every five years.

At the invitation of the Government of Kenya, the next Plenipotentiary is presently scheduled to be held in Nairobi.

[*The preceding story is based on material submitted by Mr. Goldstein.*]

COMSAT President Dr. J.V. Charyk, ITU Secretary General M. Mili and Deputy Secretary General R.E. Butler, left to right, confer during Dr. Charyk's visit to the recent ITU Plenipotentiary Conference in Spain.

Les Cameron's Bel-Aires provide musical continuity. . .

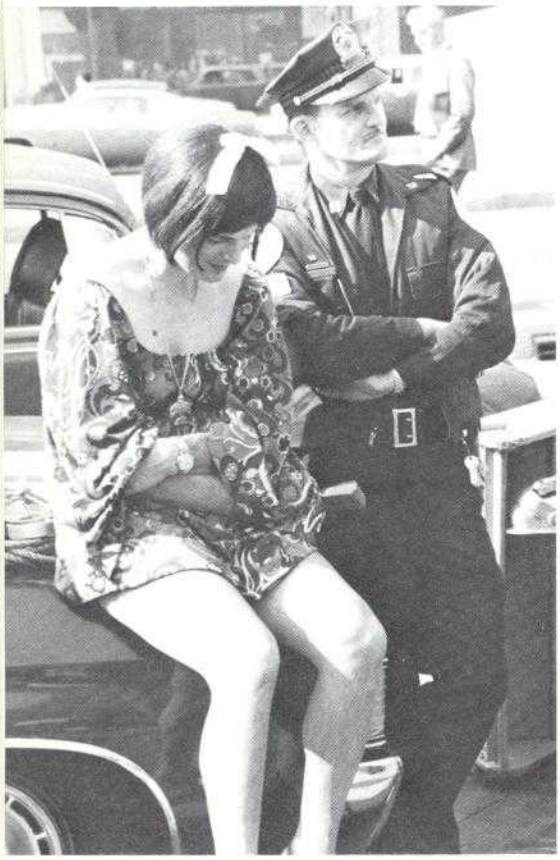
Photos by Allan Galfund

Lisa Cook, Terry Callaghan and Sharon Mack, left to right, give their impression of the Supremes. . .

COMSAT's '73 United Way drive

By Louis B. Early,
Campaign Chairman

Security Guard Capt. Frazier is unimpressed with Jim Hall's explanation, "Honest officer, it was all for charity".



Comsat has just completed a most successful 1973 United Way Campaign. The corporation contributed $13,895 and the employees $18,246.76 for a grand total of $32,142.14.

The United Way is the charity umbrella for one hundred and four agencies providing a wide variety of services to families, children, the aged, the retarded, and the physically handicapped. The agencies include the Salvation Army, Red Cross, Boy Scouts, Campfire Girls, USO, YMCA, and similar social services. The overall goal in 1973 is $15,400,000.

The highlight of the campaign was the Comsat/L'Enfant Plaza Variety Show under the direction of Mrs. Pat Irby and Miss De De Runfola. The distaff side of Comsat put together a show to be long remembered around the Plaza, finding unheard of talents hidden among the staff, and convincing approximately 20 Plaza merchants to donate door prizes. Jim Kilcoyne MC'd the show.

For the first time, the organizations of the Plaza complex jointly participated in a community project. The impact of this cooperation was reflected not only in money raised for the Comsat drive but, reportedly also helped other Plaza Organizations in their United Way drives.

To further the objectives of the campaign and to encourage employee participation, Dr. Joseph V. Charyk, Comsat President, increased the basic corporate gift and established a new plan of matching employee contributions. For every two dollars contributed by employees in excess of last year's total, the corporation increased its contribution by one dollar.

As an added incentive to contribute, the corporation gave an additional two days' vacation to lucky employee Bob Rodgers, selected by random drawings from among those who contributed an amount equal to or greater than the minimum payroll deduction (Bob used the time searching for channel bass at Okracoke, North Carolina). Bill Randall won the door prize, a weekend for two at the Drake Hotel in New York, and Gene Christensen won a weekend at Loews L'Enfant Plaza Hotel as the guest of the L'Enfant Plaza Corporation.

Dr. Charyk, announcing the successful drive, expressed his appreciation to participating employees and campaign workers. "Your willingness to respond to community needs is appreciated," he stated.

Chairman Early stated special thanks were due L'Enfant Plaza's Pete Quesada for his exceptional support of the Comsat effort.

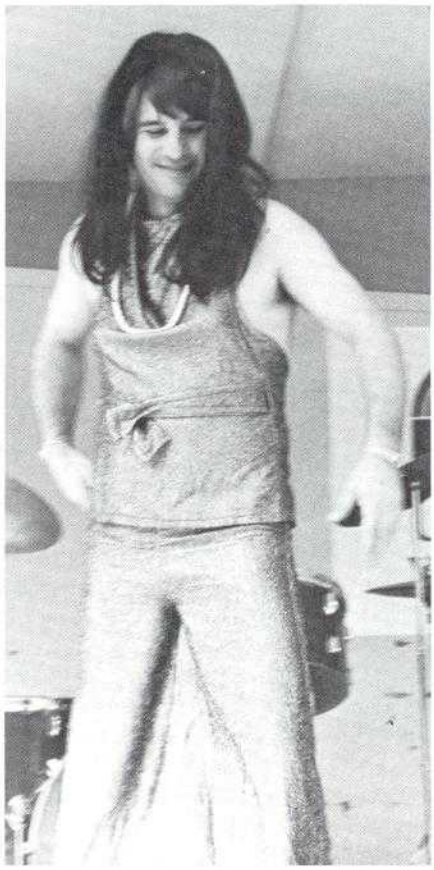
Door prize tickets being drawn by Lou Early, Pat Irby and Eleanor Ogburn . . .

The Can-Can Girls of COMSAT, left to right: Linda Kortbawi, De De Runfola, Pat Irby, Kitty Harbin, Ruth Adams, Celia Taylor and Laura Weber . . .

—the best yet!

Jean Davis applies makeup to "fashion model" Jim Hall . . .

John DeCaro models the latest in evening wear . . .



Tyrone Ricks demonstrates the latest fashions for the girls. . . .

Fifth anniversary for satellite support of NASA manned flight

By John J. Peterson

The November launch of the last of the three Skylab missions brings to a close an era of manned space exploration unparalleled in the history of man.

For the past five years the satellites and earth stations of the global communications network have played a twofold role, a role in which the commerical system has made a major contribution to man's adventure into limitless space.

For five years the global system performed as an integral part of NASA's deep space network.

For five years the satellites and earth stations provided the eyes and ears enabling vast, worldwide audiences to take part in a once-in-a-lifetime experience.

Although the goal to land man on the moon "in this decade," was stated by President John F. Kennedy on May 25, 1961, the same month that Astronaut Alan B. Shepard made America's first excursion into space, the program took its infant step toward lunar exploration with the earth-orbital flight of Apollo 7 in October, 1968.

The satellites and earth stations of Intelsat and Comsat actually became an integral part of the tracking and communicating NASA team with the trip into lunar orbit of the Apollo 8 astronauts in December, 1968, exactly five years ago.

As the early astronauts rocketed toward the moon a quarter of a million miles from earth, they went with the confidence that on the mother planet three large, silver "dish" antennas, on different parts of the earth's surface, took turns staring at them with unblinking eyes and finely tuned ears. Other than for the brief periods behind the moon when they were out of touch with their fellow man, word of their progress was transmitted at the speed of light back to earth-bound scientists and engineers over a vast network of interconnecting communications satellites and earth stations.

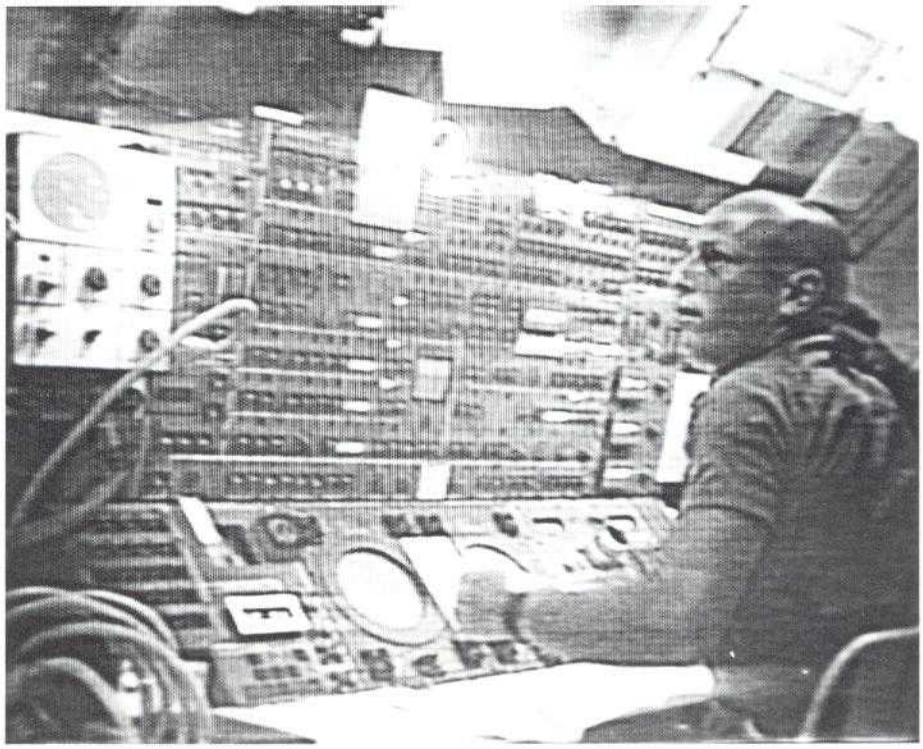
Other astronauts were to follow until more than a score of them had been safely chaperoned for a cumulative time of almost three and one-half months over distances measured in the millions of miles.

With emphasis on live television coverage of man's exploration of the lunar surface, the global network assisted in returning to the Johnson Space Center in Houston, Texas, more than 80 hours of live crew activities. From Comsat earth stations at Jamesburg and Etam more than 460 hours of space coverage were placed on satellites over the Atlantic and Pacific Oceans with stations overseas receiving close to 850 hours, including countries served by the Indian Ocean satellite by means of a double-hop.

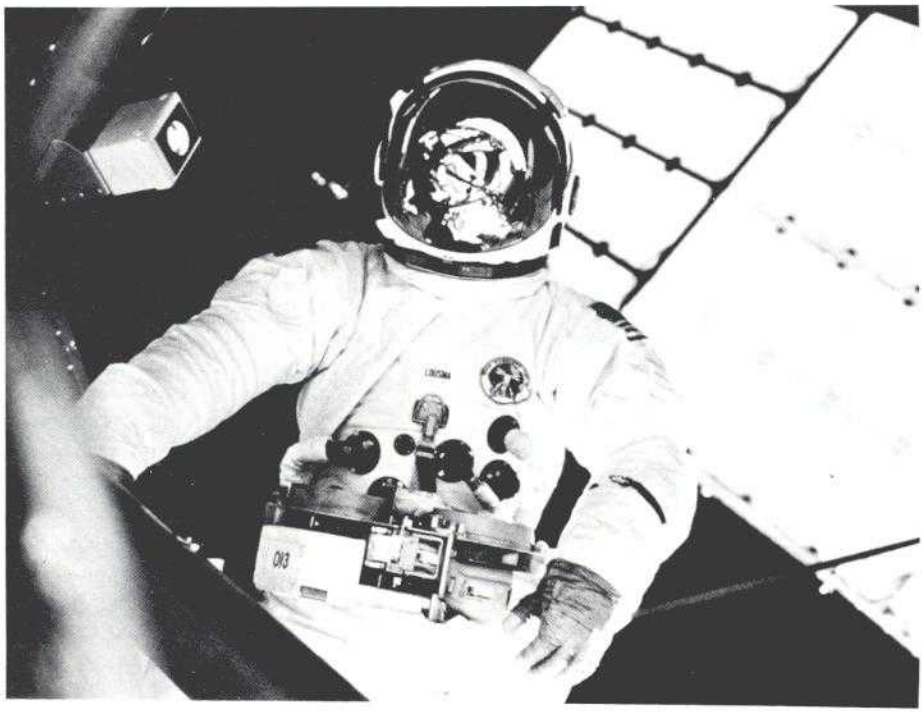
The moon served as the stage while the global network together with the NASA tracking stations constituted the camera and sound team for bringing to millions of people around the world the feature event beginning with Astronaut Neil A. Armstrong's descent from the "Eagle" to the surface of the moon and climaxing with the splashdown of Apollo 17 in the Pacific Ocean one year ago.

For its contribution to manned flight Comsat was cited by Gerald M. Truszynski, NASA Associate Administrator for Tracking and Data Acquisition, following Apollo 11, with the message: "Your magnificent performance with other communication companies from liftoff to splashdown contributed vitally to the attainment of this nation's goal to place a man on the moon in this decade."

To the critics of the live televising of manned space flight, the almost terminated flight of Apollo 14 due to



A picture taken from an earth-bound television monitor shows Astronaut Pete Conrad seated at the Orbital Workshop's console during the first manned Skylab mission. NASA photo



A worldwide audience was able to watch Astronaut Jack Lousma work in space. Lousma was part of the second Skylab crew. A part of the workshop (OWS) is reflected in his face visor. NASA photo

a docking malfunction presented a rebuttal when, on the morning of February 1, 1971, the large antennas at Goldstone, California and Honeysuckle Creek, Australia, joined forces to bring to engineers at the Texas Space Center Mission Control a televised engineering examination crucial to the decision whether to continue or terminate the mission.

"Once the docking probe had been brought into the command module," reported Walter Sullivan in the New York Times, "a television camera was aimed at it for the benefit of engineers on earth. Thus the spacecraft TV system which had been scoffed at as a public relations 'gimmick,' played a practical role."

With the flights of Skylab, emphasis was placed on the return of experimental and scientific data to earth —data in quantities which will keep scientists busy analyzing for years to come. Earth resources remote sensing equipment gather information on earth's ecology, oceanography, water management, agriculture, forestry and geography. Astronomy experiments are designed to increase knowledge of the sun and its effects on man's existence on earth, while biomedical experiments will further evaluate man's capabilities to live and operate efficiently in the environment of space.

COMSAT-operated earth stations at Etam, West Virginia and Jamesburg, California, receive data routed over the Atlantic and Pacific Ocean INTELSAT IV's for transmission to Houston, Texas, from NASA tracking sites such as Ascension Island, Carnarvon, Grand Canary, Guam, Hawaii, Honeysuckle Creek and Madrid as part of the Manned Space Flight Network supporting Skylab missions.

According to Mr. Joseph Sobala of Goddard Space Center's Communications Network Review and Analysis Branch, the first two Skylab missions returned a total of 293 hours of data to NASA scientists and engineers over the INTELSAT global system—94 hours during the flight of Astronauts Conrad, Kerwin and Weitz, and 199 hours for the manned mission of Bean, Garriott and Lousma.

With a communications transmit capability of 176,000 bits per second, data transmitted back during the two Skylab missions is in excess of 12.6 billion bits of information; four billion, eight million bits during the first Skylab and almost double that amount (7.8 billion) on the second, said Sobala.

The final Skylab mission, launched November 16 and manned by Astronauts Carr, Pogue and Gibson, and due to end early in 1974 after more than 80 days in space, will probably find the total bits of information transmitted to earth approaching the 20 billion mark for all three missions.

INTELSAT contract awards

• To *Nippon Electric Company, Limited,* Tokyo, Japan, a 17-month, $156,996 contract for the development of hybrid modems (combinations of phase and amplitude modulator-demodulators).

•To *Electronics Research Laboratory,* Trondheim, Norway, a $100,000 contract to be completed in 11 months for the development of a satellite transponder linearizer, a circuit to boost dc-to-rf conversion efficiency of a satellite microwave amplifier.

• To *Hawker Siddeley Dynamics Limited,* Hatfield, England, a $97,515 contract to be completed in 11 months for the development of an electric power conditioner.

•To the *Leybold-Heraeus Company,* Federal Republic of Germany, a $90,240 contract to be completed in 14 months to conduct a microwave integrated circuit materials study to improve the reliability, accuracy and reproducibility of microwave integrated circuits.

• To the *Research & Engineering Division of Boeing Aerospace Company,* Seattle, Washington, a $86,151 contract to be completed in 14 months for the investigation of those elements of the space environment presenting the greatest hazard to various thermal control finishes used as radiator surfaces on a spacecraft (thermal coatings).

• To *Codex Corporation,* Newton, Massachusetts, a $67,073 contract, to be completed in one year, for the development of selective repeat Automatic Repeat Request (ARQ) equipment to provide increased efficiency in the transfer of computer data under adverse conditions.

•To *Telespazio S.p.A.* of Rome, Italy, a five-month, $35,000 contract for an earth station antenna depolarization measurement study.

Dr. Joseph V. Charyk, COMSAT President, center, presents a statement of corporate support for National Guard and Reserve Programs to Maj. Johnathan F. Able, U.S. Marine Corps Reserve, right. At left is Robert Dahlgren, corporate personnel representative.

Eight antennas added in 1973

Maybe it was the worldwide energy shortage. Whatever the reason, six new earth station antennas that were scheduled to begin commerical service by the end of 1973 failed to make it, slipping into 1974 operational dates.

The year 1973 ended with a net addition of eight new antennas to the global system. The boxscore at the end of the year showed 87 antennas, at 69 earth station sites, operated by 52 different countries.

If an average investment cost of $4 million is assigned to each antenna and its associated facilities, this represents a total investment of $345 million in earth station facilities now operating in the global satellite system—a substantial long-term commitment to satellite communications.

In the Atlantic Region, new antennas added during the year included those in Gabon, Cameroon, West Germany, Spain and the Netherlands. In the Pacific Region, the lone net addition was a non-standard station at Kwajalein in the Marshall Islands. In the Indian Ocean Region, the People's Republic of China began operation of a non-standard station at Peking (two other new antennas, at Peking and Shanghai, represented replacement facilities, and not net additions to the system), and Taipei completed a second antenna.

The total of eight new antennas added during the year compares with 16 added the previous year, and the all-time one-year high of 21 antennas which entered service when the system's reach became truly global in 1969.

Forecasts for 1974 indicate that approximately 20 more antennas will join the system next year. Data for these forecasts and for other data used here are maintained by COMSAT's Analysis and Traffic Division, and is based on data supplied by member INTELSAT countries.

Net income continues to rise

Communications Satellite Corporation reported net income of $9,832,000 or 98 cents per share for the third quarter of 1973, compared to $6,469,000 or 65 cents per share for the third quarter of last year.

For the first nine months of 1973 net income amounted to $25,055,000 or $2.51 per share, compared to $19,035,000 or $1.90 per share for the first nine months of 1972.

Net operating income for the third quarter of this year was $7,778,000 or 78 cents per share, compared to $5,314,000 or 53 cents per share for the third quarter of last year. For the first nine months of this year net operating income was $20,244,000 or $2.02 per share, compared to $15,206,000 or $1.52 per share for the first nine months of last year.

Revenues were $30,747,000 for the third quarter of 1973 and $86,649,000 for the first nine months of this year, compared to $26,907,000 for the third quarter of 1972 and $77,765,000 for the first nine months of last year.

The increased revenues resulted largely from a gain in the number of half-circuits leased by COMSAT full-time via satellites to its customers. These totaled 3,420 as of September 30, 1973, compared to 2,751 at the same time a year ago.

Operating expenses for the third quarter were $15,180,000 and $45,815,000 for the first nine months of this year, compared to $15,940,000 for the third quarter and $46,563,000 for the first nine months of last year.

October the biggest for satellite TV

Figures compiled by the INTELSAT Operations Center disclose that October, 1973, set a record in the categories of the number of transmissions, receptions and total stations involved.

"Although the September, 1972, Olympics month was the financially highest revenue month historically," said IOC Manager L. W. Covert, "a review of October figures show it the only other month during which INTELSAT revenues for television use exceeded a half million dollars."

The 1972 Olympics, in addition to amassing the greatest total of satellite hours, also has the record of 44 transmissions in a one-day period. During the 17 days of the Olympics, the satellites carried 455 worldwide transmissions for a daily average of 26.8.

"For the 17 days of October 7 through the 23rd," according to Covert, "worldwide transmissions numbered 511 for an average of 30 per day. On two of the days, the satellites carried 39 transmissions each day."

As in the 1972 Olympics month, sports contributed primarily to the TV record in October with a total of 201 transmit and receive hours of baseball, United States and overseas, and almost 44 hours U.S. football coverage.

Quarterly dividend increased

A quarterly dividend of 17 cents per share payable December 10, 1973, to shareholders of record as of the close of business November 9, 1973, was declared by COMSAT's Board of Directors at its October meeting.

The new dividend rate represents a three-cent-per-share increase over the previous quarter. It is the 13th consecutive quarterly dividend paid to stockholders and raises the Corporations's total 1973 dividends to the maximum permitted by The President's Committee on Interest and Dividends.

John A. Johnson, President, COMSAT General Corporation, narrates satellite demonstration for visiting representatives of the National Association of Manufacturers.

Photo by J. T. McKenna

Manufacturing reps look at selected satellite programming

BY J. T. MCKENNA

The economic and technical feasibility of receiving closed circuit television programming by satellite using small, low cost, antennas and then locally distributing it within a metropolitan area was recently demonstrated to visiting representatives of the National Association of Manufacturers (NAM).

The video system makes use of a new service recently authorized by the Federal Communications Commission (FCC) called Multipoint Distribution Service (MDS). Utilizing super high frequencies in the 2150-2160 megahertz range, the system is designed to transmit specialized television programming to private audiences in customer-selected locations within a city.

COMSAT GENERAL Corporation and the Microband Corporation of America jointly sponsored the live satellite telecast that originated in the Metropolitan Washington area. The transmission was sent to the Atlantic Ocean INTELSAT IV satellite from the COMSAT Labs' Terminal in Clarksburg, Maryland, and was received by the 15-foot dish antenna located at L'Enfant Plaza in southwest Washington.

Nearly 150 members of the manufacturers association, attending their annual fall meeting in Washington, witnessed the demonstration. NAM members were also briefed by COMSAT GENERAL President John A. Johnson; John A. Keyes, Director of Commercial Development, and representatives of Microband Corporation of America.

Satellite transmissions for the nationwide TV network would use the COMSAT-developed Digital Television Transmission System (DITEC) and would be received from the satellite by small earth stations located in the center of large metropolitan areas. Use of an MDS local distribution system and digital satellite techniques promises low user costs.

Programs would be distributed to customers within a 20—25 mile radius from an omni-directional MDS antenna. Each customer would have a small microwave dish (approximately two feet in diameter) capable of receiving and decoding the transmission for viewing on an unused channel of a standard TV set.

COMSAT GENERAL Corporation is currently discussing with Microband Corporation ways to effectively utilize DITEC with Microband's MDS system with the expectation of increasing the quality and flexibility of a TV distribution system while assuring low customer costs.

Vacancies in CEA Board of Directors filled

Elections were held recently to fill the vacant seats created by the amendment of the COMSAT Employees Association bylaws authorizing representation on a one-per-floor basis for the Plaza and an increase from two to three for the Labs.

The 1974 CEA Board of Directors, composed of nine members, consists of Dennis Fruhwirth, 1st and 3rd Floors; Donna Higgs, 4th Floor;, Linda Kortbawi, 5th Floor; Sandy Fox, 6th Floor; Alan Kasper, 7th Floor; Louis Early, 8th Floor; and William Burch, William Schaefer and Joanne Wagner representing the Labs.

The Association provides the means by which COMSAT employees may participate in organized social, recreational, athletic, educational and other group activities.

CAM management award to COMSAT's Finnegan

The professional designation of "Certified Administrative Manager" has been awarded to Joseph D. Finnegan, Manager, Administrative Systems and Procedures by the Administrative Management Society.

The award is presented to a select number of candidates meeting the Society's requirements of leadership, communication ability, experience, personal deportment, and successful examination performance to the satisfaction of the C.A.M. Academy Board of Directors.

Formal presentation was made to Mr. Finnegan November 9 at the conference of the Academy of Certified Administrative Managers in Detroit, Mich.

Lab's racqueteers do it again

BY CARL WENRICH

For the fourth consecutive year, "racqueteers" of the COMSAT Labs defeated their Plaza counterparts in the fifth annual tennis matches played in D.C., and laid claim to the Irving Norgrod trophy.

Winning the singles for the Labs were Carl Wenrich over Bill Lowe, George Szarvas over Fred Ormsby, Henry Williams over Dick McBride and George Meadows over Rich Colino. Dave Weil and Al Kasper of the Plaza took the singles over Lab opponents Jay Levatich and Al Ramos.

In the doubles, the Labs Teams of George Huson and Tom Patterson, Ray Sicotte and Tom Dobyns won out over Plaza reps Del Bergere, Bob Bourne, Bill Simms and Dennis Fruwith. Paul Troutman and Phil Caughran captured one set for the Plaza with a victory over the Lab's Al Ramos and Henri Suyderhoud.

T. Throop survived the advanced singles elimination tournament defeating Wenrich in the finals, 6-7, 6-3 and 6-3, while A. Kasper and N. Tonelson went down before the team of W. Lowe and Wenrich in the advanced doubles, 4-6, 6-4 and 6-1.

In the intermediate finals, D. Weil won out over F. Ormsby, 6-4 and 7-5. W. Hutchens and J. Rubin defeated P. Caughran and B. Kinzie, 6-3 and 6-2.

Each winning player was awarded a trophy.

COMSAT supports "Commuter Clubcar"

COMSAT, along with almost 100 companies and agencies in the metropolitan Washington area, is supporting "Operation Commuter Clubcar", a program designed to promote carpools and use of busses as alternatives to the one man-one car transportation means currently prevailing.

"Commuter Clubcar" is jointly sponsored by the Metropolitan Washington Board of Trade, the Metropolitan Washington Council of Governments, and WTOP Radio and Television.

According to COMSAT coordinators Robert A. Dahlgren and David S. Ours, groups of employees ranging from Annapolis to Leesburg and from Baltimore to Stafford have already recognized carpooling as an effective means of combating air pollution, rapidly rising gas prices, the energy shortage and traffic congestion. They point to a recent study showing that the average Washington carpooler can save over $450 a year.

A list of COMSAT employees in zip code order has been prepared and is available as well as mass transit information. A Board of Trade commuting questionnaire is being distributed to personnel at the Labs as well as at the Plaza.

Additional information can be obtained by contacting Bob Dahlgren on Extension 6055.

"Book review"

Undaunted by the thousands of manuscripts flooding the market annually, Amy B. decided to become an authoress and determinedly forged ahead with hers. The title she selected was "Community Helpers;" her volume consists of a collection of topics, complete with illustrations, she wanted to deal with: space, zoological gardens, law enforcement, and communications satellites—characteristically, All-American.

In her opening chapter she discusses lunar exploration and concisely notes, "Spacemen are people that go up to the moon we watch on TV come out on the moon." Chapter 2 finds Amy B. describing the responsibilities of the keepers of the animals in the zoo and with accuracy states, "The zookeeper gives funny penguins fish."

With crime and traffic congestion two of today's primary areas of concern, she pays tribute to law officers in her third chapter by commenting, "Policemen help your city and home, they direct traffic." And in her closing chapter she deals with communications satellites and recognizes that, "Comsat are people who put satellites out in the sky."

About the authoress: She is Amy Breslow, daughter of COMSAT's Jerry Breslow, age 7, a second grade student of the Mills Elementary School in Potomac, Maryland.

People and Events

BREWSTER. A "Welcome to Brewster" dinner was held for **Jim Harding,** recently transferred from Jamesburg, and his wife **Maudie**. **Melvyn Tate** got a deer on the first day of the new hunting season. Twenty-four youngsters were treated to the local annual CEA Halloween Party.

—Dorothy Buckingham

EL SEGUNDO. The family picnic was the big event for "COMSAT West" personnel—the third annual gathering. Kicking off with the Director's Cup softball competition, carefully constructed lineups soon crumbled into disarray. Both **Bill Keck's "Manglers"** and **Lou Ricks' "Raiders"** claimed to have won but neither side could remember the final score. Potato sack races, hippity-hop relays and egg-throwing contests provided competition and entertainment throughout the day with everyone winning a prize. **—P. G. Avruch.**

ETAM. Approximately 30 members and guests of the West Virginia University Chapter of the American Institute of Aeronautics and Astronautics toured the station and were shown the COMSAT film "Ten Years To Tomorrow." Another group from the State Department and Defense Communications Agency, accompanied by **George Lawler** and **John Mullen** of Marketing, toured the station showing interest in the USA-USSR "hot line."

Mike Britner became a permanent employee and has been assigned to the Blue Team. **Jerry Hart,** previously Bartlett and Brewster Earth Station Senior Facilities Mechanic, has moved to Etam in the same capacity. **Mrs. Betty Bell** made the transition from temporary to permanent secretary. Photographer **John Neubauer** spent a day taking pictures for use in the annual stockholders report. Several station employees and their families participated in the annual Preston County Buckwheat Festival.

—William Carroll

FUCINO. Christina Frazier, daughter of Andover's **Hal Fraziers,** is the guest of **Don Pavalack** and his family. **Mike Hoehne** went to Brussels, Belgium, to prepare the Early Bird satellite display for its return trip to the Smithsonian. It had been on exhibit in Brussels for six months. "Buone Feste." **—Dorothy Riddle.**

GENEVA. After five years at its previous location, the Geneva Office has moved into new suitable quarters complete with air conditioning and a view of the Rhone River. **Doris Bruderlin** coordinated the move. The new address of the European Office is: 3 place Isaac-Mercier, 1201 Geneva, Switzerland. The telephone listing is Geneva 32-61-35. The telex number remains unchanged, 23248.

The 1973 edition of the Geneva Office Handbook is almost ready for distribution. The Handbook is designed as a handy reference containing basic information and telecommunications data on countries in Europe, the Mediterranean Basin and Africa. **Alan Maislisch,** a doctoral candidate in Economics at the Graduate Institute of International Studies in Geneva, was responsible for updating the new issue.

Director Irv Goldstein was a member of the U.S. Delegation to the six-week ITU Plenipotentiary Conference in Torremolinos, Spain. **Matt Nilson** presented a paper entitled "The U.S. Maritime Satellite System for Launch in 1974" at the 24th International Astronautical Congress in Baku in the USSR. **Bob Brown** visited telecommunications officials in Liberia, Ivory Coast, Ghana, Kenya and Ethiopia. **Philippa de Sausmarez,** secretary to the director, provided assistance at the INTELSAT Board of Governors Meeting in Tenerife in the Canary Islands. **Ruth Schmid** acted as vote teller for her constituency during the recent Swiss national elections. The **Gerhard Huslers** are expecting a family increase and Esther is leaving the EO.

—Philippa de Sausmarez.

Ron Bounds, Blaine Shatzer and Betty Linthicum, left to right, draw for prize winners at the Labs Halloween party.

JAMESBURG. New arrivals include **Jim Vienneau,** a recent transfer from Andover, Maine, and **John Castorina** who joined the station staff as a junior technician. **Castorina** is in the process of completing his requirements for an Associate of Science degree in Electronics Engineering. **Roy Scheiter,** a senior facilities mechanic, is recovering from surgery and is reported doing well. **—W. E. Neu.**

LABS. Congratulations to Mr. and Mrs. **Terrence Lee Morgan,** married Saturday, November 17th at the Damascus Methodist Church. Mrs. Morgan is the former **Denise Amelia Mediary** of Damascus. Congratulations are also in order for **Ken** and **Barbara Pease** on the birth of their first child, seven-pound, eight-ounce **Linda Jean Pease. Gene** and **Andrea Carlson** enjoyed a fall vacation at the Miami Beach's BEAU RIVAGE Hotel in Florida.

Bill Windell, Fred Smith and **Norman "Grandpa" Miller** spent Thanksgiving week in Headwater, Virginia, deer hunting without success. However, Bill received a homecoming surprise from some of his Labs

co-workers—a mixture of 50 boxes of Jello and 70 pounds of ice in his bathtub. About 30 couples attended the Lab's Halloween Party with Mr. and Mrs. **Fred Esch** awarded first prize for the best costume. The **Blaine Shatzers** did the decorating.

—Carol Louthan

Burks takes COMSAT fall golf classic

Dave Burks led golfers of the COMSAT Fall outing played recently at the Lake Needwood Golf Course in Montgomery County with a low gross of 72. Fred Ormsby came in with a 71 for low net, with Fran Kline low net in the women's category.

Jerry Embrey had the longest hit with a 260-yard drive down the 11th fairway. In a contest to see who could come closest to a hole-in-one, Arnold Satterlee placed a ball within five feet of the pin.

What COMSAT Plaza and Labs golfers agree was the greatest shot came on the 18th hole (par 4) when John Welch lofted his second shot 175 yards directly into the cup for an "eagle."

THE PLAZA. John T. McManus of Finance and **Gail F. Davis** of Personnel were married November 24 at a Nuptial Mass at the Church of the Holy Family in Hillcrest Heights. Approximately 200 members of the family and friends attended the ceremony and the reception held later at the Andrews Air Force Base Officers' Open Mess. The **McManuses** will make their home in Chevy Chase. **Ed** and **Barbara Lucia** have a new son **Oliver Andrew,** weight 6 pounds and 6 ounces. **—Joyce Przelenski.**

Roger Taur of the Labs improved his slice over his wildest expectations during the Fall Golf Tournament. Here he faces up to the dilemma of which half of the ball to play.

Low gross flight winners were Marv Bowser, Bob Redick, Nate Tonelson and Bernie Free. Low net for each of the four flights were golfers John Welch, Paul Fleming, Randy Kreutel and Jim Potts.

The power supply unit and its principal architect Jeffrey Gnass which resulted in an almost $800 saving to the Paumalu Earth Station and COMSAT.

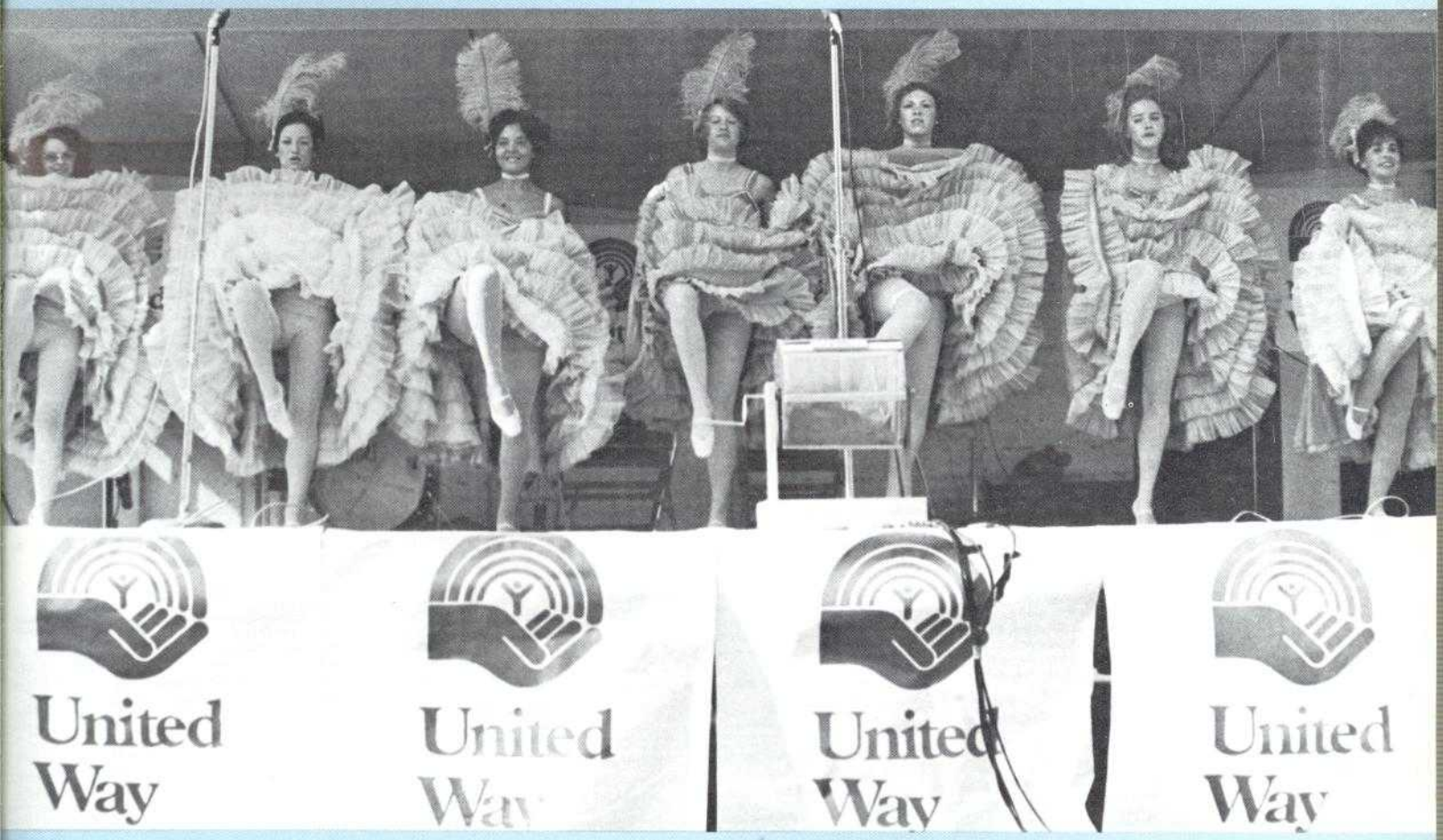
Ingenuity leads to savings

In need of an 0-550 Volt dc, 50 milliampere regulated Power Supply at the Paumalu Earth Station, and without the necessary regulator nor the desire to pay the more than $800 for suitable equipment, technicians of the newest State's facility called on "American ingenuity" and built their own.

The cost to COMSAT, $80—a 90% savings for the company.

Previously, station personnel had used various "kluges" to check out uninterrupted power source regulators (a kluge is, in engineering slang, a Rube Goldberg device that works). The kluges were satisfactory alternatives until the Xerox copying machine in an adjoining room was turned on, resulting in unwanted variations in the dc output and the waveforms on the oscilloscope. The new instrument eliminates these deformities.

Senior technician Jeffrey Gnass was the principal architect of the project. Gnass is a member of Team Two, supervised by Al Prevo.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