SATELLITE Pathways

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Interview with new INMARSAT's first Director General, Olof Lundberg, page 8

Launch Control Center, ready and open for business, page 1

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COMSAT GENERAL CORPORATION

SATELLITE Pathways

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CONTENTS

LAUNCH CONTROL CENTER

Open and ready for business on the first floor of headquarters

THERE'S SOMETHING NEW on the first floor of COMSAT's headquarters building, and it's open and ready for business. What it is is the most sophisticated commercial facility of its type in the world today—the 3,600 sq. ft., two-tiered Launch Control Center.

Representing an investment by the Corporation in terms of design cost, construction and equipment of $1.5 million, the new Launch Control Center is intended for the monitoring and control of the most critical phases in the life of a spacecraft: its launch into transfer orbit and its injection into synchronous orbit. And it will also be utilized for special support such as in-orbit performance verification and testing (verification that the craft has gone through launch and transfer orbit environments without degradation) and anomaly investigations.

Of these activities, by far the most important—as the name of the center implies—is control of the satellite from launch through the critical maneuver of apogee motor firing, which boosts the spacecraft from the transfer to the synchronous orbit.

Who will use the facility? The Corporation is making the Launch Control Center available on a contract basis to any organization in the business of operating spacecraft including, but not limited to, those with whom it enjoys a close working relationship, such as INTELSAT and Satellite Business Systems (SBS). And its use need not be restricted to satellites launched into synchronous orbit either.

A small number of COMSAT employees will work full-time in the center watching over and checking the health of its $750,000 in data processing and computer, monitoring and communications equipment. When a launch is under the direction of the facility, however, as many as 55 people will be at work within the plush beige and blue boundaries of its four walls including 40 spacecraft engineers, system analysts and mis-

(Continued on next page)

LAUNCH CONTROL CENTER

(Continued from page 1)

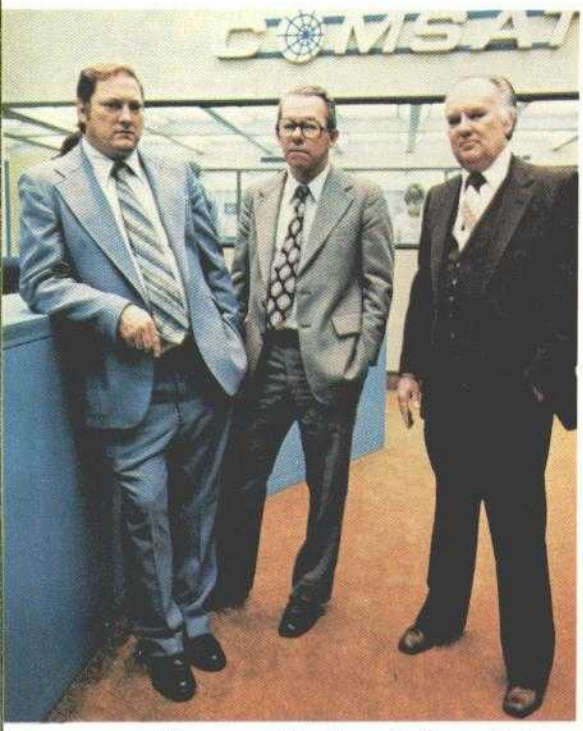
sion controllers and the balance from the ranks of management.

Providing these people with the information they need on every aspect of spacecraft performance and control is a complex information-gathering, data processing, storage and retrieval system, the heart of which are two computers, each with its own disk memory, line printer and control console—a system which includes dedicated data-line links with the Corporation's main 3032 computer in Clarksburg, Maryland. (The 3032 is used for orbit determination and maneuver generation as well as processing all spacecraft attitude determinations.) Input for the computers is the steady stream of data coming into the center over data lines from TTC&M (telemetry, tracking, control and monitoring) earth stations.

The two Launch Control Center-based computers are each designed to back up the other in the event of failure, but under normal conditions both share the load to decrease the processing and display update times. The computers, for example, are programmed to compare spacecraft performance data with established norms and to transmit out-of-limit information in the form of warning signals that alert operators that intervention is required. And they are programmed to provide mission controllers with updates on the sequence of mission commands still to be performed, including sequence options depending on conditions encountered.

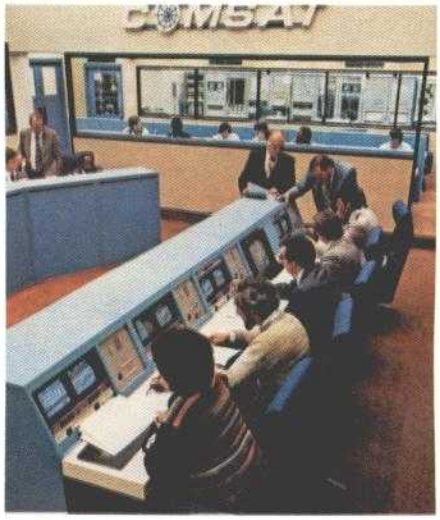
The output end of the center's data processing equipment is a system of 96 video cathode-ray-tube (CRT) displays—84 10-inch black and white, 10 14-inch black and white, and two 19-inch color monitors. At each of the 40 mission control and analyst stations are two 10-inch black and white monitors.

At the touch of a dial, those working in the facility are able to select for augmentation and display from among 20 presentations. In addition, the outputs of six live video cameras can be selected on any monitor. The video cameras are used to show the outputs of strip-chart recorders and



Manager of the Launch Control Center is Jack Tennant, right. He in turn reports to Frederick W. Weber, left, Deputy Division Director, Space Segment Implementation. Martin J. Votaw, center, is Division Director.

PHOTOS BY BILL MEGNA



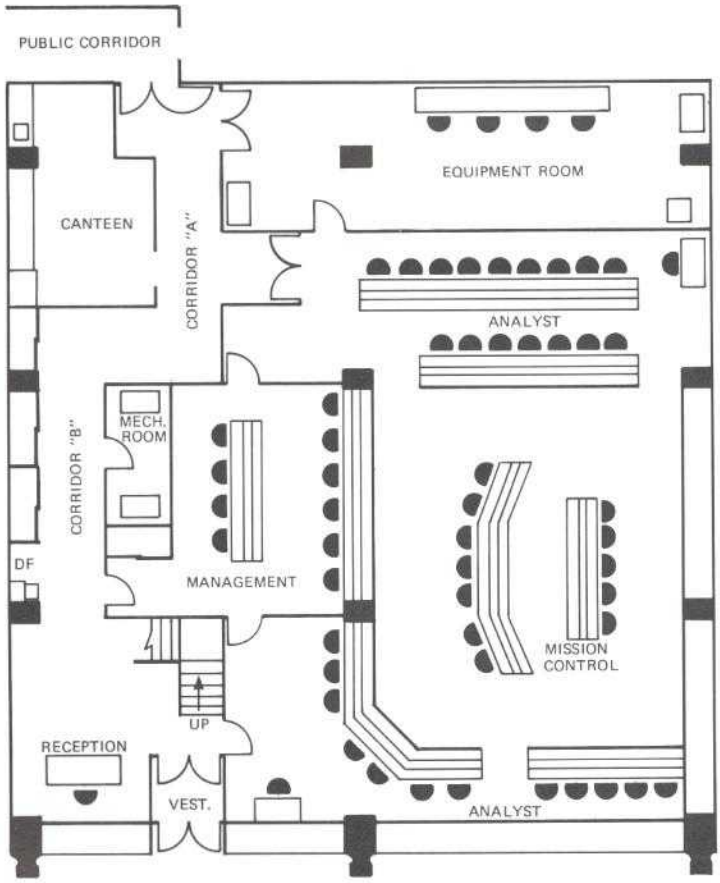
Above: From the stations in the foreground, commands are issued to the spacecraft. Photo left: A view of the Center from the area set aside for management.

can also serve to show any other Launch Control Center activity desired.

From the visitors' area in the second tier, guests are able to observe the mission control and analysts areas below, and upon large screens directly across from them, multicolor video and slide displays are projected. In fact, any display available for viewing on the CRT monitors can be projected on the screens for the benefit of those in the second-tier visitors' area.

The new Launch Control Center is part of the newly-created Systems Technology Services (STS), headed by Dr. Burton I. Edelson, Vice President. Manager of the facility is Jack Tennant, Mr. Tennant in turn reports to Frederick W. Weber, Deputy Division Director, Space Segment Implementation. Martin J. Votaw is Division Director.

Already, the Corporation has contracts for 10 missions for the new Launch Control Center—the eight scheduled INTELSAT V and two scheduled SBS launchings—and it is anticipated that the launch of the fourth COMSTAR, D4, also will be under the direction of the facility. These 11 missions will get the facility off to an impressive start, but given the level of activity for the commercial uses of space that is anticipated in the 1980s and beyond, we are likely to look back on these missions as only the beginning of a very active history for COMSAT's Launch Control Center.



Above: A diagram showing the layout of the first floor of the Launch Control Center. Photo left: The equipment room, which includes the center's two computers. Note TV cameras, top right.

Helmo Raag explains INTELPOST system operation to INTELSAT Board of Governors. Left to right: P. J. Castel-Branco, Governor for Brazil; H. Raag; S. Astrain, Director General of INTELSAT; G. Sasaki, KDD Liaison Office, M. Garfinkel, Governor for Argentina.

New contract with USPS is signed.

Here's a status report on INTELPOST T.M.

BY HELMO RAAG

THE United States Postal Service (USPS) and COMSAT entered into a new contract in January, 1980, for improvements and maintenance of the INTELPOST system. The contract covers an 18-month time period.

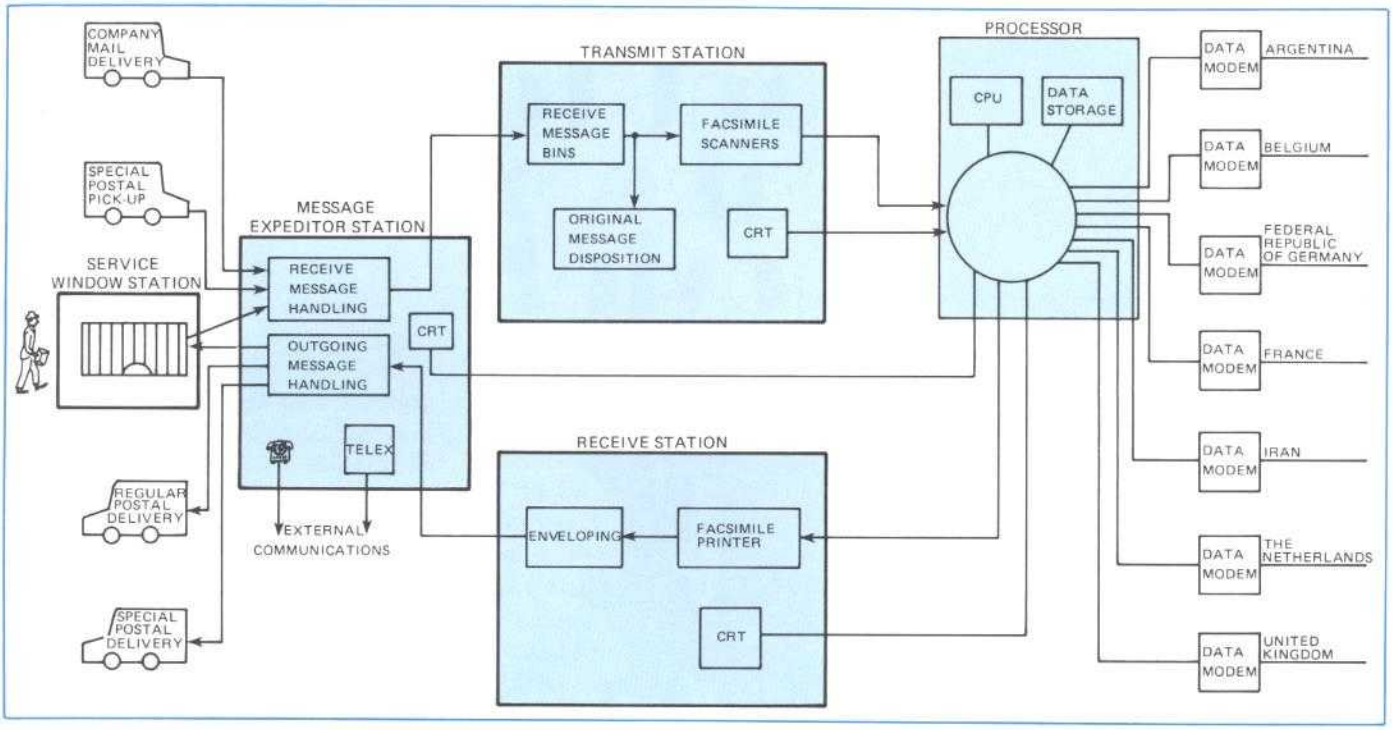
The INTELPOST system was designed and implemented by COMSAT under a contract signed in March, 1978, with USPS for demonstration of an experimental international electronic message system via satellite. COMSAT also developed an INTELPOST field trial plan for the USPS. The Postal and Telecommunications Administrations of Argentina, Belgium, Canada, West Germany, France, the Netherlands, Switzerland, and the United Kingdom decided to implement similar INTELPOST installations, and have agreed with the USPS to conduct demonstrations and a field trial of the system.

At present, COMSAT has installed two INTELPOST sites for the USPS. These are at the World Trade Center in New York City and at the USPS Headquarters, L'Enfant Plaza, in Washington, D.C. A number of countries in the Pacific have also shown a great interest in the system, and it is quite possible that the USPS may install INTELPOST sites on the West Coast and elsewhere in the United States.

The Washington, D.C. and New York City INTELPOST sites were installed in March, 1979, and the USPS and the Post Office of the United Kingdom have been conducting demonstrations and tests of the system between London and the two U.S. sites since July, 1979, when the U.K. INTELPOST site became operational.

From July 9, 1979, to August 8, 1979, a one-month INTELPOST demon-

Mr. Raag is Director of Electronic Mail Systems, Systems Technology Services.



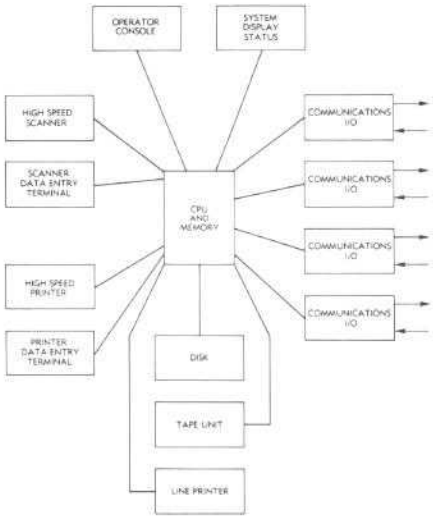
The functional configuration of an INTELPOST Service Center.

stration was held between the USPS and the UKPO sites as provided in the USPS/COMSAT contract. It was very successful. Regulatory disputes in the USA regarding the USPS's right to charge customers for INTELPOST service during the field trials, and whether the Federal Communications Commission (FCC) has jurisdiction over the USPS, have prevented the start of the INTELPOST field trials. Nevertheless, these difficulties are expected to be overcome shortly. The Administration of President Carter has declared it in the U.S. national interest that the USPS be allowed to proceed with INTELPOST field trials, and the National Telecommunication and Information Agency (NTIA) has expressed similar views.

COMSAT has also entered into technical assistance arrangements with most of the other INTELPOST countries. In some cases, such as for Canada, the Netherlands and Argentina, COMSAT is providing turn-key type services, procuring all equipment, installing and bringing into operation the systems in these countries, and training their personnel. In other cases, such as for France and West Germany, equipment has been procured by the Administrations involved, whereas COMSAT provides for system integration, operation and training.

The INTELPOST system has been designed to provide an international electronic message service between

INTELPOST EQUIPMENT CONFIGURATION



end users. This means that in addition to the technical design of the system, other INTELPOST service features, including message collection and delivery procedures as well as other message handling details, have been planned and coordinated between the participating Postal Administrations.

The INTELPOST system equipment configuration is shown in the figure to the left. It includes a minicomputer with disk storage for store-and-forward operation. All messages are stored on disk after scanning and before being transmitted to distant sites. Similarly, all received messages are stored on disk before printing. Thus the scanning and printing operations are separated from the message transfer procedures between sites. This provides a number of advantages.

Message input and output is via high-speed digital facsimile scanners and printers and interactive video terminals. High speed scanners and printers provide for operator convenience as well as increasing system

(Continued on page 21)

So you want to make a movie?

By James T. McKenna

To most people, producing films means glamor—trips to exotic places, lots of lights and in general "the good life." Well there is truth, at least in part, to these ideas, but I would like to tell you about the planning and extremely complicated logistics that go into making a film—the part that you don't see on the screen.

When planning to make a film the first and most important demand is determining at the start exactly what story you want to tell, how much time on the screen it will take to tell and how it can be completed within the budget.

The Public Affairs Office recently went through this planning exercise in producing a 12-minute marketing services film. After compiling an outline, or "treatment" as it is called in the business, we worked with a film producer to select locations and a filming schedule.

Writing the outline and schedule for the film was easier than trying to execute it, that is, having to deal with the realities of airline schedules, weather, camera equipment functioning properly and the like.

There were certain events which were occurring in the normal course of Comsat's conduct of business that were not subject to change. Therefore, a substantial number of filming sequences had to be scheduled to take these events into account. Our shooting schedule took us to California, American Samoa, Colorado, Massachusetts, and Maine, and included, as well a lot of activity in the Washington, D.C. area.

Our first stop was the Ford Aerospace plant where we filmed the Intelsat V spacecraft. The setting for this sequence was a large assembly room. Hours were required for lighting the assembly and test areas properly. Once filming begins, four or five "takes" often are required to get just the right angle or move. Even with all this effort, which may involve shooting more than 800 feet of film, the completed movie may only contain 10 to 15 seconds of what took half a day to shoot. In some cases, a segment that took hours to capture may not even appear because of time constraints or, as every director and editor hopes for, there is so much outstanding footage that something has to end up "on the cutting room floor."

When we finished filming at Ford Aerospace we packed our 21 camera cases and headed for the airport and the 10-hour flight to American Samoa. One always hopes that all the cases get on the same plane as the camera crew. Losing a lens case, the film, or other equipment can turn a film project into a nightmare, especially in areas where there is no replacement equipment available.

We encountered such a problem in American Samoa, for we arrived without a package of lights. Our schedule would be adversely affected if we couldn't get lights. All our efforts turned to finding adequate replacements in Pago Pago for filming the required interior scenes. Finally, the local TV station was able to lend us a set. While our schedule was disrupted by half a day, we were able to obtain all of the essential footage we needed.

Weather conditions are another major factor in filmmaking. If it rains for a full day, or for several days, an entire sequence can be lost. In planning a long and distant trip, you factor in a day or two for inclement weather or other unforeseen problems, but many times that is not enough and you must proceed to the next location.

To give you an idea of how tight film schedules can be, I will set down our schedule for seven days in late November. A substantial number of the scenes to be included in the

Mr. McKenna is Manager, Marketing Support Services, Office of Public Affairs.

marketing services film were shot during these seven days:

Sunday night after Thanksgiving five of us left from three different areas of the U.S. to meet at 10:00 p.m. in Denver, Colorado. We met on time with the 21 cases of camera equipment and drove for about an hour and a half to Fort Collins where we were to film staff members of COMSAT's subsidiary, Environmental Research & Technology, Inc. (ERT), engaged in several types of environmental services.

Early Monday we met with the ERT staff and scouted locations for filming scenes on aquatic biology. We filmed in near zero degree temperatures while struggling through snow that was two feet deep in places. The sun was obscured, but we decided that we had better film that day in case the second day was the same way. Tuesday was sunny, but freezing temperatures prevailed like those on Monday. We re-shot the Monday sequences, then did interiors of an ERT biology lab. That same day we had to catch an airplane for Boston from Denver. After much running around and counting camera cases, we hurried to make the plane.

We arrived around 10:30 p.m. in Boston where we went through the usual airport hassles and then headed for Concord, where we were to film the next morning at ERT's headquarters.

Wednesday we did a series of interior sequences on ERT's air quality and monitoring programs. We completed our filming about 5:00 p.m. and had a restful evening; one of the first since we left the previous Sunday night.

Thursday morning we drove to Andover, Maine, to work on a sequence for a 60-second TV commercial to be used in COMSAT's partial sponsorship of the Summer Olympic Games. We arrived at Andover late in the afternoon and set up the camera equipment for the footage to be obtained Friday.

Early Friday morning we filmed the new TTC&M antenna, along with a sequence relating to the responsibilities of COMSAT's earth station personnel in relaying TV programs to the world, via satellite.

Our Andover sequences were completed about 2:30 p.m. and we again hurriedly packed the camera equipment for the two hour ride to Portland, Maine, and a 5:45 p.m. flight to Washington, D.C.

We arrived in Washington around 8:00 p.m. and headed for the film company's offices to clean the equipment and make ready for the aerial photography, which was scheduled for Saturday morning at 9:00 a.m.

Saturday was a crisp, cold and sunny day. While everyone was tired, the beautiful view of L'Enfant Plaza and the Washington, D.C. metropolitan area skyline from the helicopter generated the enthusiasm in us needed to obtain several wonderful scenes of COMSAT's headquarters and Laboratories.

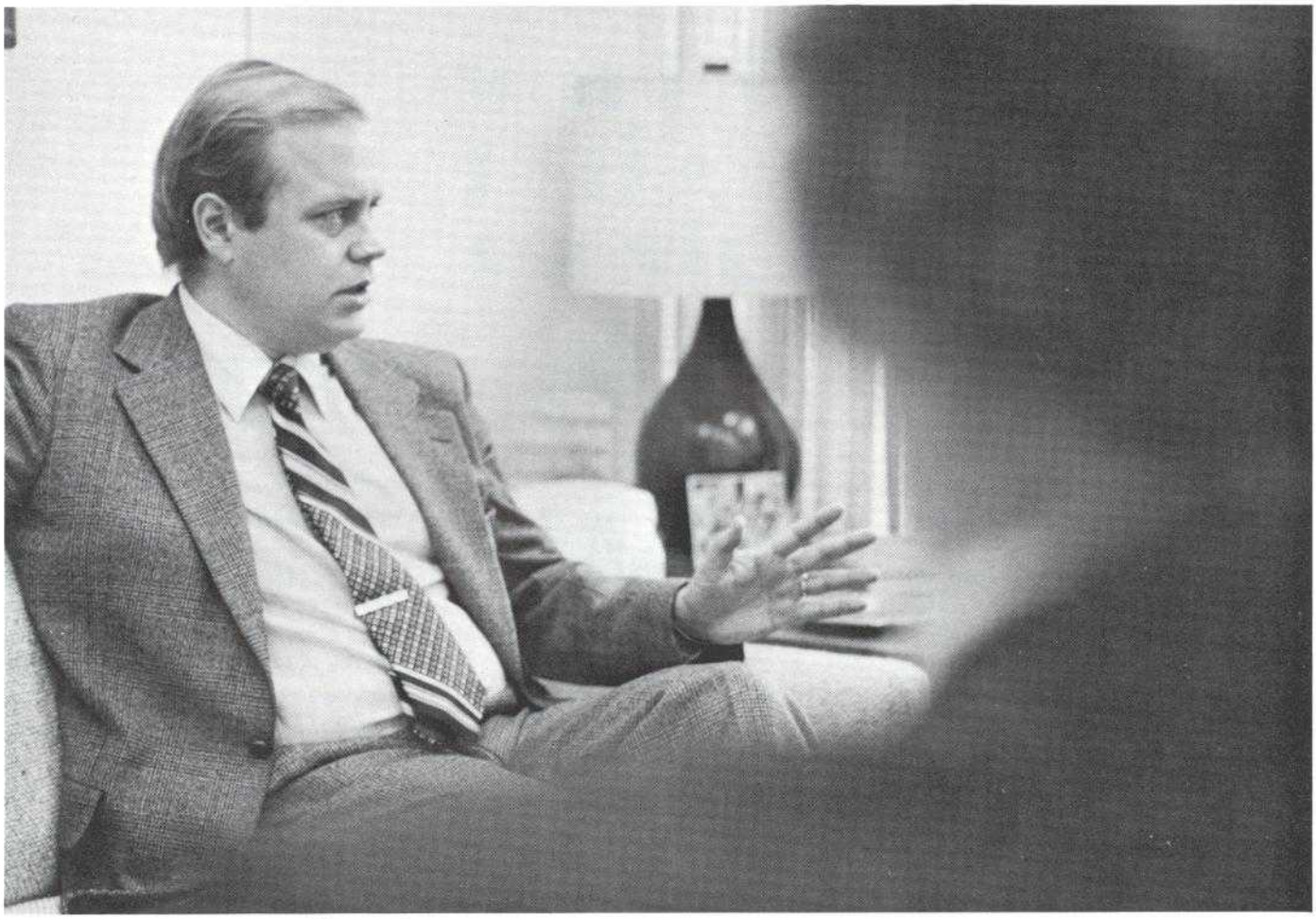
After completing the aerial photography, we spent the afternoon at the home of a COMSAT engineer filming a sequence relating to the COMSAT Satellite Subscription TV proposal. The sun was setting as we filmed the small one-meter rooftop antenna, similar to that which will be used in the SSTV program. With the completion of a two-hour interior shot we finished the SSTV segment and thus put to an end countless hours working and travelling. It was an exhausting week, but we accomplished everything that we had set out to do. When I returned to the office on Monday, various members of the staff asked, jokingly, how the skiing was in Colorado; the scrod in Boston, and the lobsters in Maine. Well, it gave me a good laugh.

We were lucky in many respects, because we returned with what we went to get. Think, however, of how easily that seven-day trip could have turned into a financial disaster. For example, suppose the camera didn't make a plane connection; the camera-man became ill; we missed a plane; or the worst of all possibilities, the film had been put through an airport X-ray machine that was not working properly! These kinds of things create sleepless nights for filmmakers. It is, however, something one accepts as possible and learns to live with.

Looking at the processed film makes most of the hassles worth the effort. If you can put up with the grind and pace, and accept the fact that you are dependent to a large extent on the dedication and efficiency of other people and organizations, it is a wonderful way to experience and understand this country, and the world.

* * *

Copies of the new marketing services film will soon be available from the Marketing Services Section of the Corporation's Public Affairs Office, 950 L'Enfant Plaza, Washington, D.C. 20024.



Director General Lundberg during the interview at COMSAT headquarters.

PHOTOS BY BILL MEGNA

An interview with new INMARSAT's first Director General

OLOF LUNDBERG

DURING a recent visit to the United States, Olof Lundberg, new Director General of the International Maritime Satellite Organization (INMARSAT), was interviewed for publication by Hale Montgomery, Director, Business Promotion, of COMSAT GENERAL, and Steve Saft, Editor of PATHWAYS. Mr. Lundberg, age 37, was formerly Head of the Frequency Planning Section of Televerket (the Swedish Telecommunications Administration) in Stockholm.

INMARSAT, which was formed to provide global commercial maritime communication satellite services, came into being in July of last year and now has 29 members, of which COMSAT is the sole U.S. representative. Housed in offices in London, England, the organization has as its principal task the creation of a system that will ultimately replace COMSAT GENERAL's MARISAT global system.

What follows is an edited transcript of the interview with Director General Lundberg.

Q: Have you moved into your new offices in London yet?

LUNDBERG: We moved into offices just a week ago. We have just a temporary staff and it is very provisional. After January 3, we hope to

have the offices on a more permanent basis.

Q: Where are they, physically?

LUNDBERG: They are physically located just outside the central area of London, south of the Thames, just five or 10 minutes away from the new IMCO offices. We hope that we will be able to stay there at least for two or three years.

Q: The INMARSAT system will be compatible with the many MARISAT terminals that are now in use. Is that correct?

LUNDBERG: It is an understanding that the initial INMARSAT system will be fully compatible with the MARISAT system when it comes to terminals and frequencies and so forth. In the future, of course—as all things develop—there might be improvements in terms of more facilities, more services. That's standard. But no problem about being compatible, that's for sure.

Q: So that a ship owner might look for a lifetime with his present terminal of maybe 10 years?

LUNDBERG: It is in the interest of INMARSAT to make sure that users of the system get economical life out of existing equipment. And even if new schemes develop in various ways, I'm sure that the existing equipment would be taken into account through transitional arrangements. That should be no problem.

Q: How many shore stations do you envision in the initial INMARSAT system? Do you have firm indications of what countries are planning to build earth stations?

LUNDBERG: There are a number of very crucial decisions that must be made about the space segment before we see commitments of that kind. And for Signatories and for ship owners to have the confidence they require, I'm sure that we will have to see these decisions come through. Until we have INMARSAT taking the initial, very important decisions in the space segment configuration and so forth, there will be some countries holding back. It is a shaky period. But I'm sure we will see all members around the world promote vigorously the services of maritime communication satellites.

"... the initial INMARSAT system will be fully compatible with the MARISAT system when it comes to terminals and frequencies and so forth. In the future, of course—as all things develop—there might be improvements in terms of more facilities, more services."

Q: Hasn't Norway announced that they are going to build an earth station?

LUNDBERG: Probably the first European station will be a Nordic one with a physical location in Norway, the same arrangement they have in INTELSAT. The station is planned to be operational with the first INMARSAT space segment.

Q: What year will that be?

LUNDBERG: It depends on how fast it can be built, and there might be some dependence again on having good solutions to the space segment problems. That is my understanding. There are also others in Europe who have expressed an interest, the U.K. for instance, in building a shore station. I am sure that most members of INMARSAT are thinking in one way or another how to associate themselves with earth stations. It will not be necessary or economically justifiable to build earth stations everywhere. That would just cost the members of INMARSAT and the users a lot of money. An earth station is a rather major investment. It would be beneficial for countries to cooperate.

Q: For planning purposes, what are we talking about—1981, 1982—for an operational space segment?

LUNDBERG: I believe that we are talking about late 1981, not earlier.

Q: Is there a physical limitation on the number of shore stations for system operational plans?

LUNDBERG: That problem can be solved if the system is optimized. If it is optimized economically, all countries will not have shore stations. All countries in Europe don't need shore stations. The USSR has indicated that it will build an earth station as have Singapore, Australia, Kuwait, and Brazil. Maybe this won't happen in the first year, but I'm very sure that in the mid 1980s there will be a significant number of stations.

Q: Let's talk about the space segment.

LUNDBERG: My position is simply that it's a matter that the Council has to decide. My interest is that of the organization, and that is that we have solutions that take account of the interests, the views, the positions of our various member countries. We have all these countries with various ways to operate commercially. We have the U.S. way to operate. We

(Continued on next page)

OLOF LUNDBERG

(Continued from page 9)

have the European way to operate, and we also have, of course, China and the USSR. It would not be appropriate for either China or the USSR to say to the others, "You should do it our way." It would not be appropriate for Europe to say to the others, "You should do it our way," or for the U.S. to say this. The solutions that we have to come up with must be sensible. They must be efficient.

Q: What space segment options are available to INMARSAT?

LUNDBERG: First of all, we assume that Signatories would be interested to see to it that we have transitional arrangements one way or another between MARISAT and whatever comes after MARISAT. Secondly, we know that INTELSAT is building satellites with maritime capability and we know that the European Space Agency is building satellites with maritime capability.

Q: You mean the European MARECS?

LUNDBERG: Yes, that's right. Those satellites are being built as are the INTELSAT satellites. So I would assume that there should be strong views on the part of the majority of members that these must be utilized one way or another. Now there are many variations on all this, and that's what is being discussed. Hopefully we'll have that settled in 1980.

". . . we assume that Signatories would be interested to see to it that we have transitional arrangements one way or another between MARISAT and whatever comes after MARISAT."

Q: Tell us something about your own view of this new job you have. Are you excited about the possibilities?

LUNDBERG: The opportunities to participate in the creation of an organization like this—hopefully an organization that will play a vital role in modernizing international maritime communications—is very challenging, is very stimulating.

Q: How do you see maritime activities changing in the future as a result of the presence in the world of INMARSAT?

LUNDBERG: When you say maritime activities, there are various sorts of maritime activities. I think it's fair to say that initially your largest customers in MARISAT have probably been very particular users in the maritime environment, and the biggest of the users of your services have probably been platforms, drill ships, that is, the offshore industries in contrast to the traditional maritime industries, shipping and so forth. The shipping industry has traditionally been conservative. You have the old traditional policies in which the captain is really the master. The ship sails with a box of money on board. The captain is in charge of paying the crew and with all other aspects of running the ship. Of course these things are changing and have been changing for a long while.

I have been involved in the late 1960s and now the 1970s with the development of communications for supertankers. We tried to improve communications for the supertankers before satellites. In those days, the industry was booming, and, of course, ship owners had very bold views about the future, how their ships should be managed. They recognized that these high investments needed a slightly different kind of management from the old-fashioned vessels. They were very interested in improving communications. In fact, they believed in centralized management through heavy use of communications.

These days I believe the trend is back towards decentralized management, but decentralized in a way in which plentiful communications are required. In addition, there's a requirement for what one can call social or crew communications, and there we have the consideration, of course, of costs. Maritime communication satellites can offer ships a sort of communications in which everyone on board can have real-time connection with shore. You lift the receiver. You dial and there you are. You're connected with anyone on shore.

Q: Do you think there will ever be a market for video transmissions to

"I believe my immediate responsibilities are very much administrative, to make sure we have a good administrative structure, that we develop a good and efficient one, that we attract good, qualified, very highly professional, interested people."

ships at sea?

LUNDBERG: That's something that requires an enormous and very expensive satellite with high power, and you run into international frequency and legal problems. I don't see live television being financially viable to ships on the oceans for the next 10 years at least.

Q: What do you consider your greatest challenge as Director General of INMARSAT?

LUNDBERG: I believe my immediate responsibilities are very much administrative, to make sure we have a good administrative structure, that we develop a good and efficient one, that we attract good qualified, very highly professional, interested people. That is my first priority. I rely upon the Council to make wise decisions on matters like the space segment.

Q: Do you think that INMARSAT has a role to play in providing certain ancillary services, the dissemination of weather information and radio navigation, for example?

LUNDBERG: That's an area where our members could have various views, but personally I would say that from my experience in the maritime environment, I believe that it is in INMARSAT's interest to try to vigorously develop such services. It is our responsibility to find out what the mariner requires and to try to tailor new services to the demand for them when that is in the interest of users of the system and of the organization.

Q: Do other possibilities come to mind in addition to radio navigation and weather information dissemination?

LUNDBERG: I think that there are a few functions that are related to safety communications. There are a number of possible services in connection with that, for instance, the possibility to receive signals from emergency beacons. Any communication system has a role in vessel safety, but in the maritime environment communications for safety purposes have to be very reliable, and there are a number of things we ought to do to make sure that we can prove in the next 10 years or perhaps in a shorter time that a satellite system could be *the* system for vessel safety.

Q: From the perspective of INMARSAT, were you pleased with what happened at WARC?

LUNDBERG: I was not personally very much involved in the details of the conference, but INMARSAT has reason to be reasonably satisfied. There could have been better solutions in a number of cases, but the most important thing is that an addition to the spectrum on the L band was allocated, the most important band for us. We will have quite a good capacity for expansion in the next decade and that's important for INMARSAT. The heavy congestion on HF will still be there, and it is not likely that one will see any great improvement. That will work in favor of INMARSAT too.

Q: Tell us about Maritex, which you were very heavily involved with in Sweden.

LUNDBERG: I prefer to call that teamwork. I was very heavily involved, yes. My involvement there was a direct consequence of Swedish shipowner interest in improving telecommunications. The owners came to the Swedish Telecommunications Administration to ask us to look into such possibilities. We tried out a number of ideas, and we came up with one. They wanted data communication but telex was good enough. We used error correcting schemes on HF, which made it foolproof, very safe, very secure. What happened in those days was that minicomputers came into being, and you could use them reasonably cheaply. We merged old-fashioned HF technology with them, and we came up with a system that automatically can send and receive telex. It selects the best frequency. It stores and forwards. For telex, it is able to compete very well with MARISAT. It cannot provide telephony, and, while it squeezes the most out of HF, there's still a risk of delays, especially over long distances.

Q: What role do you expect IN-

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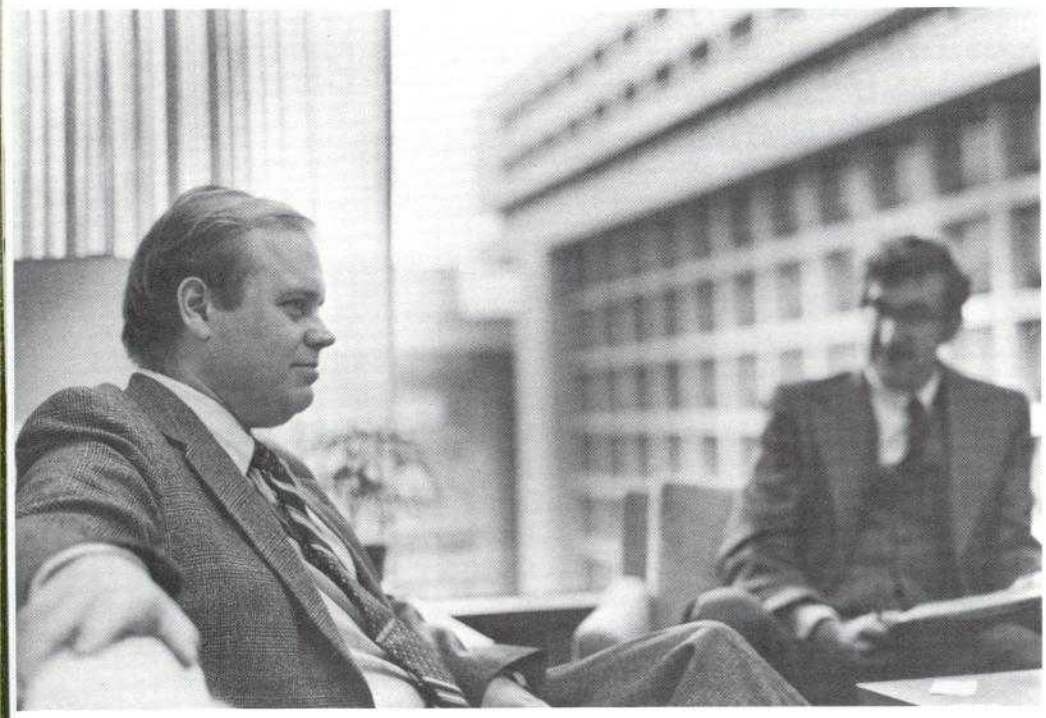


"So INMARSAT will have—the same as MARISAT has—specifications that must be adhered to. The ship terminals to be used in the system must be approved. The access must be approved. . ."

OLOF LUNDBERG

(Continued from page 11)

MARSAT to play in the manufacture and sale of shipboard terminals?

LUNDBERG: Our role will be to make sure that the ship terminals work with the INMARSAT system, and that means that they should be compatible with the space segment and in some technical aspects, with the HF power, the frequency, the channels, and other criteria. It must also, of course, be compatible with the signaling system. So INMARSAT will have—the same as MARISAT has—specifications that must be adhered to. The ship terminals to be used in the system must be approved. The access must be approved by INMARSAT, but, of course, it's again up to the manufacturers to competitively develop good terminals. INMARSAT will definitely not be in the terminal business in any way. It will be in the interest of INMARSAT owners that this is a competitive market, that there are good terminals available and that they adhere to technical standards developed by INMARSAT.

Q: Do you foresee INMARSAT carrying out the inspection of terminals?

LUNDBERG: Not a day to day inspecting function. There are a few aspects that must be watched. One has to make sure that the terminals, when users are operating with the system, continue to adhere to standards in terms of frequency, power and signaling.

Q: Then INMARSAT will be concerned about type acceptance?

LUNDBERG: INMARSAT will have to do that. It could vary in various countries. In some countries, local law covers some aspects of type acceptance. But INMARSAT will see to it that terminals used with INMARSAT's satellites adhere to INMARSAT standards.

Q: Do you think INMARSAT will ever attempt to appeal to small ship operators such as commercial fishermen?

LUNDBERG: There is an interest in some countries in providing smaller and less expensive terminals. Such a terminal might work with a dish that has to be manually directed to the satellite.

Q: Mr. Lundberg, you are in your mid-thirties. Do you think your relative youth is an advantage or disadvantage or matters not at all in your job of Director General of INMARSAT?

LUNDBERG: I think it matters. Clearly, it matters to the extent that if I was 15 years older I would have more experience. On the other hand, I know when to look for advice in areas where I don't have the experience. Where I don't have the knowledge, I am not at all hesitant to ask people whom I know who have experience and knowledge.

COMMENT: We wish you the best of luck. Congratulations on taking the post. And we wish INMARSAT the best of luck as well.

Board reduces charges and approves introduction of TDMA/DSI

By Betsy Kulick

The Fortieth Meeting of the INTELSAT Board of Governors was held December 6–13, 1979 at INTELSAT Headquarters. Twenty-five Governors representing sixty-eight Signatories attended all or part of the meeting.

Technical and Operational Matters:

In one of its most significant actions, the Board approved TDMA/DSI as an accepted modulation/access technique. Operational plans for its introduction in the Atlantic Ocean Region in 1983–85 and in the Indian Ocean Region in 1984–86 are under development. The Director General was asked to prepare for Board consideration alternative approaches to a TDMA/DSI charging policy.

The Board approved modifications to the INTELSAT V contract, including addition of automatic thermal controls for the earth sensors, the manufacture of an additional 4-GHz feed array, and more stringent requalification testing of the feed array. The Director General was authorized to have pre-acceptance tests performed on the F-1 spacecraft. The delivery of the first INTELSAT V spacecraft is expected in mid-August 1980. Projected delivery of the second spacecraft is mid-October 1980.

The Director General was asked to continue negotiations with NASA and ESA to reserve launch options to meet INTELSAT's requirements in the 1981–1984 timeframe, including possible use of additional Atlas/Centaurs. He was also asked to explore launch vehicle availability including the utilization of expendable launch vehicles to meet INTELSAT's requirements beyond INTELSAT V.

The Board decided not to authorize the accelerated delivery of INTELSAT V (F-5) nor to secure an option for inclusion of an MCS package on INTELSAT V (F-4).

The Board asked the Director General to continue to refine INTELSAT VI spacecraft concepts as a matter of priority. Three mid-term options for the period prior to the introduction of INTELSAT VI will also be pursued: use of INTELSAT V spacecraft only; use of moderate capacity advanced INTELSAT V spacecraft for international and domestic services; and use of all 6/4-GHz Delta-class spacecraft. The Director General is to proceed with the development of performance specifications for a moderate capacity advanced INTELSAT V and to initiate negotiations with FACC for firm, fixed proposals. He is to submit for Board approval at the March meeting a Statement of Work and RFP for an INTELSAT-funded design competition leading to a proposal for a Delta-class hybrid satellite.

The Board directed the Director General to convene an extraordinary meeting of the Assembly of Parties on April 4, 1980, immediately after the Ninth Meeting of Signatories in Orlando, Florida, to consider the advice of the Board of Governors with respect to coordination with the INTELSAT system of the ARABSAT and PALAPA-A regional satellite systems. The Board will determine, at its March meeting, the advice it will tender on these systems.

The Board established, retroactive from March 1, 1979, a separate type of utilization applicable to non-standard earth stations which carry traffic allotted on a unit basis, and limited to the period when Standard A stations are removed from service for dual polarization retrofit for operation with INTELSAT V. The rate adjustment for the utilization will be 1.0, subject to the following conditions: that it be applied only to non-standard stations with a minimum G/T of 31.7 dB/K; is applicable for a period of time as determined by the Board on a case-by-case-basis; and is subject to availability of space segment capacity.

The Board then approved non-standard stations in Gabon, Angola and Peru for access to the space segment under the terms and conditions defined above. The Board also approved non-standard stations for use with domestic transponder leases in Australia (51 stations); Brazil (8 stations); Norway (2 stations); Peru (4 stations) and Saudi Arabia (3 stations). United States experimental earth stations in Fairbanks, Alaska and Clarksburg, Maryland, were approved for tests and demonstrations.

The Director General was asked to provide the Board at its March meeting a recommendation concerning the appropriate rate of charge and contractual arrangements for preemptible leased transponder service, bearing in mind the need to prepare for an orderly transition to planned leased transponder service at the earliest practicable time.

The Board approved Argentina's

(Continued on next page)

Ms. Kulick is Analyst, Representation Support, INTELSAT Affairs Division.

INTELSAT REPORT

(Continued from page 13)

request for the lease on a preemptible basis of one and one-half global beam transponders. The Board also decided to advise the Meeting of Signatories that the services provided under the preemptible allotment agreement with Australia for one spot beam transponder (to be later converted into two INTELSAT IV-A hemispheric beam transponders) fall under Article III(b)(ii) of the INTELSAT Agreement and qualify to be considered on the same basis as international traffic.

The Board authorized the Director General to dispose of the INTELSAT III (F-3) satellite by raising and circularizing its orbit and de-energizing the satellite.

Financial and legal matters

For the eleventh successive year, the Board approved a reduction in rates. Effective January 1, 1980, the rate per unit of utilization was reduced from $480 to $420 per month, and SPADE charges were reduced from seven cents to six cents per minute. The Board also decided to discontinue charges for occasional use of audio services associated with television where the audio is carried in the video channel; and to establish a charge of four cents per minute where the audio is not provided in the video channel, without distinction among types I, II or III audio.

The Board approved the 1980 INTELSAT budget as presented by the Director General and reviewed by the Budget and Accounts Review Committee. It also approved the addition of thirty professional and thirteen general services positions to the Executive Organ staff in 1980, and the regrading of four professional and three general services positions as requested by the Director General.

The recommended 1980 R&D program of $8.5 million was also approved; of the total, $7.25 million is for contracted-out effort and $1.225 million is for in-house work.

The Director General was authorized to conclude an agreement with Hughes Aircraft Co., to settle Hughes' obligation to INTELSAT for use of INTELSAT-owned INTELSAT IV data for non-INTELSAT purposes (TELESAT, WESTAR and PALAPA spacecraft).

The Board was informed that INTELSAT's insurance broker, Corroon and Black, has obtained liability and launch failure coverage for the first five INTELSAT V launches.

The Board was informed that INTELSAT had settled its lawsuit with the State of California for use taxes paid by INTELSAT in connection with procurement of INTELSAT III satellites, and that INTELSAT expects to recover approximately $359,000 inclusive of interest from April 28, 1975.

Two exhibitions in Washington have COMSAT booths

PHOTOS BY MICHAEL K. GLASBY

Bill Simms, Assistant Director, Sales & Business Development, discusses network requirements with potential customers during Communication Networks '80 exposition January 23-30 at the Sheraton Washington Hotel.

Bob Gruner, left, of the Microwave Lab, describes the advantages of the Multiple Beam Torus Antenna (MBTA) to a visitor to the Labs exhibit at the National Telecommunications Conference at the Shoreham Americana Hotel.

IC holds third in a series of GWU courses

Twenty-five people attended the course, which met in headquarters sixth-floor conference room.

PHOTOS BY MICHAEL K. GLASBY

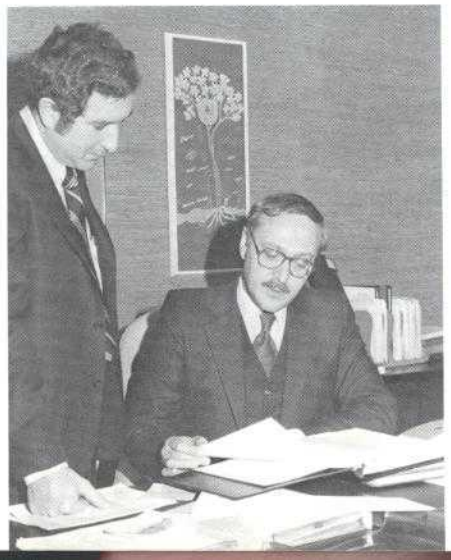
By Stan Schachne

International Communications (IC) has completed the third in a series of after-hours George Washington University courses at Comsat. The course was B.Ad. 280, Contracts and Management of the Acquisition Process.

The subject was of such great interest that the class size of 25 was oversubscribed. The class was drawn from those IC personnel involved in procurements and such supporting organizations as Earth Station Engineering, Legal and Finance. Four division directors were in the class.

Mr. Schachne is Manager, Financial Analysis, International Communications.

Irving Goldstein, seated, Vice President, International Communications, discusses course content with Stan Schachne.



The instructor was Harvey Gordon, who is Deputy for Procurement in the Office of the Assistant Secretary of the Air Force for Research, Development and Logistics. Mr. Gordon has extensive experience in the field, both from the seller's side when he worked for private industry and from the buyer's side for the Air Force. His lectures were illustrated with many examples from the C-5A and the F-16 as well as more mundane construction procurements.

The course focused first on alternative organization forms for procurement and involved a comparison of a functional form with a program office. We explored the authority of a contracting officer and how a contract can get modified without the contracting officer being aware of it. We then discussed how a procurement team should function.

The discussion of work statements and specifications went into the conditions favoring either the design spec or the performance spec and how the hybrid is a compromise. The importance of contract language was stressed, although it is not practical to foresee all contingencies that may arise. Courts will try to be guided by principles of fairness and equity in undefined situations.

A contract is formed after a bid is made and then accepted unconditionally by the other party. The contract requires consideration and mutuality.

The course went into disclaimers, warranties (both expressed and implied) and each party's obligation to disclose information to the other.

Distinctions were made among actual impossibility (no one can do it), subjective impossibility (someone else may be able to perform), practical impossibility (the job can be done but it is so costly as to be unreasonable) and economic impracticality (when performance may bankrupt the contractor).

The course went into the different characteristics of a procurement through an Invitation to Bid and a Request for Proposal. Different contract types were explored. We studied both formal and constructive change orders.

Since penalty clauses haven't worked any better for the Air Force than for Comsat, we talked about incentive award fees to motivate contractors.

The succeeding course in this program is EE251, Survey of Telecommunications Systems. IC has been assisted in this program by the Human Resources Development Department.

looking at ERT

With this issue we begin a regular feature in PATHWAYS, LOOKING AT ERT. Through the feature, we will be focussing on developments at this newest member of the COMSAT family likely to be of interest to all the readers of the magazine. The feature is edited by Ms. Dallas Gale, Staff Assistant for Communications to Dr. Norman Gaut, ERT President.

Institute schedules second annual seminar for June

EDITED BY DALLAS GALE

THE ERT International Environmental Management Institute will present its second annual seminar on environmental planning and management from June 9 to 20, 1980, at ERT Corporate Headquarters in Concord, Massachusetts. Entitled *Principles of Environmental Management in Developing Countries*, the seminar will present speakers and workshops aimed at assisting government ministers and other high officials of developing countries to strengthen their skills in environmental planning and problem solving.

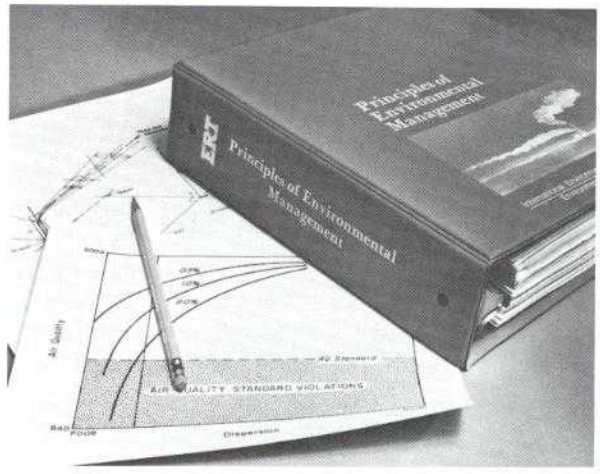
Sound environmental policy is as important to the growth of developing countries and the quality of life of their citizens as is sound economic policy. This seminar offers participants workable solutions to the problems of environmental management that arise during economic development and industrialization. Using an integrated approach, presentations will address scientific, technical, legal, economic, social, administrative, industrial, and human issues important to governments of these countries.

ERT professional staff, including both scientific and management experts, will serve as faculty for the seminar organized by John Whitman, Director of the ERT International Environmental Management Institute. Visiting faculty members are drawn from government agencies, international organizations, and universities where they have demonstrated expertise in the environmental field.

The seminar consists of 10 days of presentations, discussions, case studies, and a field trip to a private industrial and a municipal environmental management site. Discussions allow participants to become familiar with a wide range of disciplines involved in environmental management. At the same time, participants are encouraged to pursue in-depth specific areas of interest. Examples of topics to be discussed are definition of environmental issues, standards and regulations, sources of pollution and their control, environmental impact assessment, education and training, and environmental benefit/cost analysis.

Fifty-five representatives of 26 countries participated in the successful first ERT International Environmental Management Institute Seminar in June 1979. Government ministers, vice ministers, minister's designates, and government administrators with a wide range of responsibilities gathered in Concord, Massachusetts, at the first seminar of this kind to be offered by a private sector company with actual environmental problem-solving experience. Joining ERT scientists and management experts as seminar speakers were Mr. Robert Bernier, formerly of COMSAT and now Vice President and Director of ENVIRONET Ad-

Text and materials for International Seminar on Principles of Environmental Management in Developing Countries held at ERT in June 1979.



vanced Development for ERT, and Dr. John McLucas, Executive Vice President of COMSAT and Chairman of the Board of Directors of ERT. Mr. Bernier and Dr. McLucas discussed the role of communications satellites in environmental management.

ERT established the International Environmental Management Institute as an outgrowth of recommendations made at the United Nations Conference on the Human Environment, held in 1972. The Institute provides professional education and training programs in environmental planning, management, and operations. Additional information about the Institute and its upcoming international seminar may be obtained from John Whitman at ERT, 696 Virginia Road, Concord, Massachusetts 01742; telephone: (617) 369-8910.

Sixty ERT employees joined Dr. John McLucas, Executive Vice President of COMSAT and Chairman of the ERT Board of Directors, for a question and answer forum in January at ERT headquarters.

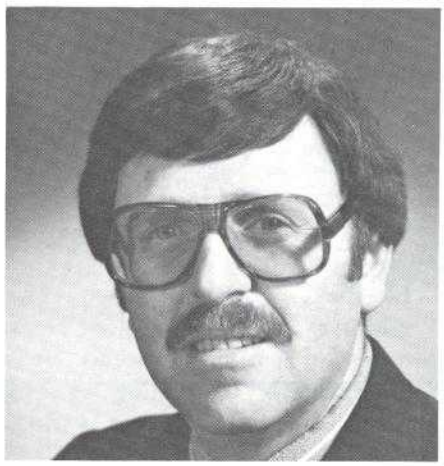
PHOTOS BY DON HARPER

Nitrogenous pollutants are subject of book

AIR POLLUTANTS containing nitrogen are the subject of a recent book edited by an ERT Senior Scientific Advisor, Dr. Daniel Grosjean. The variety of articles included reflects the diverse directions of current research into the environmental effects and chemical reactions of nitrogenous pollutants.

Published by Ann Arbor Science Publishers, Inc., the book is entitled *Nitrogenous Air Pollutants: Chemical and Biological Implications.* Its 20 chapters are derived from a symposium organized by Dr. Grosjean and sponsored by the Division of Environmental Chemistry at the 175th National Meeting of the American Chemical Society.

Dr. Grosjean's current work at ERT's Environmental Chemistry Center in Westlake, California, involves the characterization and chemical transformations of gaseous and particulate pollutants, with particular emphasis on toxic substances. He holds a Ph.D. in physical organic chemistry from the University of Paris.



ERT has appointed W. Michael Henebry as Vice President and Director of Planning and Commercial Development. He will work closely with COMSAT to identify and develop business opportunities appropriate to the information-gathering abilities of ERT and the communications capabilities of COMSAT. Mr. Henebry was previously Vice President and Director of Marketing for ERT, directing the activities of seven regional marketing managers and of the headquarters marketing staff.

Elliot Newman has been reappointed as the ERT Director of Marketing. He provides overall management and direction to the corporate marketing, sales and promotion programs. Mr. Newman, who has been with ERT over 10 years, was appointed Vice President of the company in 1974. He was instrumental in the initial technical design and implementation of the ERT AIRMAP® program and personally directed many air quality impact studies.

NOTES FROM PERSONNEL

Who's who in the Office

BY HOLLY PRYATEL

AFTER reading my column, you might want to contact someone else in Personnel for further information, so I think this is a good time to introduce the Headquarters staff to you and explain briefly what they do.

Let me first explain that the purpose of Personnel is to provide overall general direction to the Company in the management of its human resources.

David Nye, Assistant Vice President for Personnel, is responsible directly to COMSAT's President, Dr. Charyk. Mr. Nye and **Roy Greene,** Director of Personnel, develop and implement policies and programs covering the various functions of Personnel, which include employment, benefits, wage and salary administration, training, equal employment opportunity (EEO), employee relations, and health and safety.

Included in the Assistant Vice President's department is **Rick Fisch,** Manager of Personnel Systems. He is responsible for evaluating existing personnel programs at the various COMSAT locations. He also conducts future needs and organization studies, determining what the human resources information needs are and what kind of systems can be developed to meet those needs. Assistance in this department is provided by **Danette Smalls** and **Carolyn Williams.**

Our Headquarters employment staff consists of **Gary Hess,** Manager, and **Pat Cramer** and **Bud Whitehouse,** Employment Representatives. They recruit applicants for open positions, assist in identifying employees for promotions and transfers, handle relocations, counsel on employee-management problems related to staffing, provide temporary workers, and perform exit interviews. Assistance is provided by **Betty Kyle, Irma Burris,** and **Kathleen Freeman.**

Bob Dahlgren, Assistant Director of Personnel, Compensation and Benefits, develops and recommends the corporate benefit, compensation, and overseas compensation programs. Also in this department, **Steve Parker** administers the non-exempt salary program, and maintains the overseas compensation program, the personnel management information system (personnel records) and the job evaluation program. **Stephanie Smith** administers the Corporate benefit programs, including our medical and dental insurance coverage, thrift and savings plan, retirement, and service awards. Assistance is provided by **Vi Sepper, Glenda Cooper, Yvonne Dupree,** and **Denise LaSalle.**

In the Human Resources Department **Mel Williams,** Manager, and **Betty Smith,** Administrator, develop, organize and conduct training and educational programs in connection with management and promotional development and skills development. They also organize the employee orientation program, and work with performance review procedures and employee counseling.

Denver Graham, Manager of Safety and Health, and **Sheila Doherty,** Administrator, develop and recommend to management policies, practices, and procedures for occupational safety and health that will provide a safe and healthful work environment for employees at the various COMSAT/COMSAT GENERAL locations. Under their direction are the two Health Units, each staffed with a Registered Nurse: **Juanita Tutt** at the Plaza and **Betty Mowen** at the Labs. This department receives assistance from **Sandra Williams.**

In the employee relations area, I am responsible for keeping employees and management informed of personnel policies, procedures, and benefits by updating the Employee Handbook, researching, developing, and drafting personnel policy statements, writing Personnel Bulletins, and writing this column. I also serve as consultant to the CEA and Credit Union.

Personnel also has staff people located at the various COMSAT divisions and subsidiaries. The Personnel Department at TeleSystems, Inc., is headed by **Linda Neely,** who has a staff consisting of **Sherry Braham, Jo Moyer, Marie Neri, Ismael Melendez,** and **Lisa Eberhart.** COMSAT GENERAL's department, managed by **Jack Rutter,** includes **Sandy Wood, Jera Bradford,** and **Pam Parks.** The Laboratories department, with **Don Chontos** as the manager, consists of **Wanda McKinley, Charlotte Scott, Brenda Gray, Barbara Reader,** and **Sallie Plummer.** At ERT in Concord, Massachusetts, manager **Dan Moorehead** is assisted by **Ann McArdle, David Burns, Susan Bouchard, Lynn Aschenbrenner, Ed Scheipers** and **JoAnn Hartshorne.**

Sometimes your questions can be answered by reading the appropriate section of your Employee Handbook. But, if you need Personnel's assistance, don't hesitate to contact the appropriate person mentioned in this article.

In my column in the last issue, I said that we would be returning to the normal 10-day holiday schedule in

(Continued on page 28)

Ms. Pryatel is an Employee Relations Specialist in the Personnel Office.

George Meany's long service acknowledged

"He was an excellent director and we will miss him both as a friend and as an advisor."

Chairman Harper

"COMSAT was honored to have had the privilege of George Meany's common sense, insight, candor and wit . . ."

President Charyk

George Meany, President of the AFL-CIO and member of the COMSAT Board of Directors since 1964, died on January 10.

"George Meany clearly qualifies as a great American," said John D. Harper, Chairman of the Board, shortly after Mr. Meany's death. "He was a very broad gauged individual with some very strong, firm principles.

"I had a lot of contacts with Mr. Meany over the years and one of the more pleasant was his service as a director of COMSAT," Mr. Harper recalled. "He was an excellent director and we will miss him both as a friend and as an advisor."

Dr. Charyk echoed these views when he said, "America and the Communications Satellite Corporation have lost not only an unmatched champion of working men and women, but also a strong defender of the free enterprise system.

"COMSAT was honored to have had the privilege of George Meany's common sense, insight, candor and wit in the deliberations of its Board of Directors. For 15 years he provided a source of vision and guidance for this Corporation. We extend our sympathy to his family on the loss of this remarkable American."

New five percent rate reduction effective February 1

In January COMSAT filed with the Federal Communications Commission a general five percent rate reduction for its basic charges for international communications satellite services which became effective February 1.

The filing followed COMSAT's announcement on December 21 that it was planning to reduce the rates to its customers, the U.S. international common carriers, by five percent. The extent to which the benefits of COMSAT's February rate reduction will be passed through by the carriers to the public will depend upon actions by the carriers and the FCC.

Under the lower rates COMSAT's leased voice grade channel rates will be cut by $65 per month from $1,340 to $1,275. The combined audio and video rate for the first ten minutes of a television transmission would be reduced from $189 to $168.50. Thus, the cost of the average TV transmission, which was 39 minutes during the first 11 months of 1979, will be reduced by five percent.

The rates for other services, including high speed data channels, SPADE, DIGISAT and sound program channels, will also be reduced.

COMSAT was able to implement its reduced rates on February 1 as a result of FCC authorization to waive

(Continued on next page)

NEWS

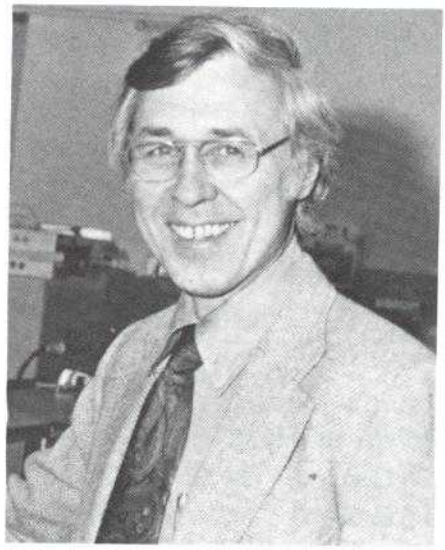
RATE REDUCTION

(Continued from page 19)

the regular 70 day notice period.

COMSAT has reduced its rates for international services on numerous occasions since commercial service was first introduced via the Early Bird satellite in 1965, most recently by 15 percent last May.

Dr. Joseph V. Charyk



William J. Getsinger

IEEE honoring two from COMSAT

Dr. Joseph V. Charyk, President and Chief Executive Officer of the Corporation, and William J. Getsinger, Manager, Circuit Design Department of the Microwave Lab, have been elected Fellows of the Institute of Electrical and Electronics Engineers (IEEE), the highest grade of membership in the IEEE. Dr. Charyk has been President of COMSAT since its start in 1963. Mr. Getsinger has been a member of the COMSAT Laboratories since April 1969.

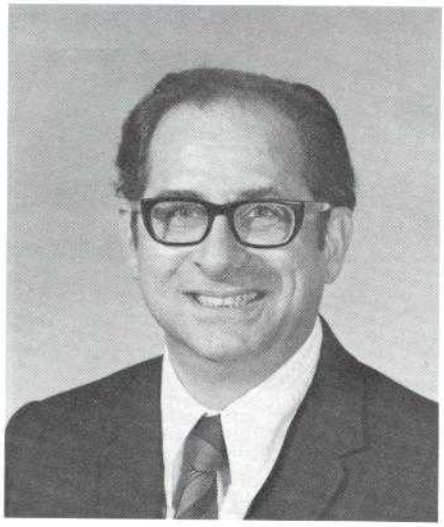
As established by the IEEE by-laws, "the grade of Fellow is one of unusual professional distinction and shall be conferred only by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in the fields of electrical engineering, electronics, radio, allied branches of engineering or the related arts and sciences, who has made important individual contributions to one or more of these fields."

Dr. Charyk's letter notifying him of his election cites him for "leadership in development and application of communications satellite systems."

Getsinger's letter notifying him of his election, cites him "for contributions to modeling and computer applications of microwave design."

Newly elected IEEE Fellows, students and other award winners will be honored at the 1980 Joint Washington/Northern Virginia Sections Awards Banquet to be held at the Fort Myer Officers' Club on Saturday, March 15, 1980.

Other COMSAT personnel who are Fellows of the IEEE are: J. V. Harrington, Sidney Metzger, Louis Pollack, Pier L. Bargellini, Burton I. Edelson, Edmund S. Ritter, John L. McLucas, and S. J. Campanella.



Dr. S. J. Campanella

Lab director elected Chairman of EASCON

S. J. Campanella, Director of the Communications Processing Laboratory, has been elected Chairman of the EASCON Board of Directors for a 2-year term. The Board is responsible for the continuity of the annual EASCON Technical Meeting which is held in the fall. Other COMSAT personnel who have served previously as Chairman of the EASCON Board are Rob Briskman and Dave Lipke.

Dr. Campanella has also served on the Technical Committee of EASCON and in a number of other IEEE committee functions. He is a Fellow of the IEEE.

Canadian is appointed to INTELSAT post

INTELSAT has appointed Marcel Perras as its new Director of Business Planning.

Mr. Perras, a Canadian, is currently Vice-President, International Affairs, of Teleglobe Canada. His career in international telecommunications dates back to 1949, and he has been a member of the INTELSAT Board of Governors since 1975. He served as vice-chairman and as chairman of the Board during 1977-78.

NEWS

Luciana C. Divine

Assistant on Secretary's staff helping law group

Luciana C. Divine, Assistant for Corporate Matters in the Office of the Corporate Secretary, will serve as a member of the Advisory Committee of the Institute for Paralegal Training of Philadelphia. The Institute has achieved national recognition as a leader in law-related education and was the first of similar institutions to receive the endorsement of the American Bar Association.

As a member of the Institute's Advisory Committee Mrs. Divine will advise the group on such matters as course topics and conduct of seminars. In addition, she will serve as a spokesperson for the Institute.

Last summer Mrs. Divine attended a seminar on Corporate Law given by the Institute; her evaluation of the seminar sufficiently impressed the management of the Institute that they asked her to serve on their Advisory Committee.

Mrs. Divine is an alumna of the University of Rome, Italy, and of the George Washington University Legal Assistant Program.

David Jupin of COMSAT Laboratories shown at an INTELPOST terminal. Mr. Jupin is responsible for INTELPOST software development.

INTELPOST

(Continued from page 5)

throughput. They operate typically at 10 seconds per page.

All INTELPOST sites will be interconnected to form a packet switched network. The network enables the routing of messages between any of the sites in the network. Each site can act as a source or a destination of a message, and, commensurate with the throughput capacity of the site, each site can act as a transit center for messages of other sites when the necessary transmission facilities are installed and the necessary routing instructions are included in the computers at the sites.

Operation of the INTELPOST system between New York, Washington and London, has validated the basic system design. Although the initial system implementation represents a totally nonredundant equipment configuration (there is no duplicate equipment to prevent delay in case of malfunction), it has operated relatively reliably with only a few hardware malfunctions between March and December, 1979. The USPS and the other Administrations have agreed to proceed into the field trials using the systems as implemented for the demonstration phase. At the same time, the operation of the demonstration systems has revealed certain necessary or desirable improvements. Many of these have been recognized since the beginning of the INTELPOST program, but were not initially implemented due to schedule or cost. The new USPS/COMSAT contract is intended to focus on these system improvements.

The INTELPOST systems have been implemented at present by all participants using RAPICOM high speed facsimile scanners and printers and Digital Equipment Corporation minicomputers. COMSAT subcontracted system software development to Bolt Beranek and Newman.

The INTELPOST program was initiated and guided by Dr. Burton I. Edelson. A program organization was formed for carrying out the work, with people from many parts of COMSAT contributing and this author directing the effort. Ronald Garlow was responsible for the system design and equipment selection. Dr. Jerome Lucas was responsible for the INTELPOST service definition and field trial planning. David Jupin and Steve Cook were responsible for software implementation. Dr. Robert Kwan has been responsible for coordination of our foreign technical assistance activities. Many others, too numerous to mention, have contributed.

The INTELPOST sites in Washington and New York have been visited by many visitors and prospective system users, and have received considerable favorable publicity in newspapers, magazines and on TV.

Edelson leads 19-member

DR. BURTON I. EDELSON, Vice President, Systems Technology Services (STS), was head of a 19-member delegation that toured satellite and launch vehicle centers in the People's Republic of China in November.

Sponsored by the American Institute of Aeronautics and Astronautics (AIAA), the 17-day tour brought the 19 Americans to five areas in China —Beijing, Xian, Nanjing, Shanghai, and Canton. Formal meetings were held with officials of the Chinese Academy of Space Technology, the Chinese Academy of Sciences, the Ministry of Post and Telecommunications (PTT) and the Central Meteorological Bureau, and there were visits to some 14 research centers and production plants. In addition, the delegates had an opportunity to see some of the sights of the country, such as the Great Wall.

Dr. Edelson had this to say about the trip in a summary prepared by AIAA, "China is developing technology across the board for satellite communications, including that required for satellites, earth stations, and transmission systems. Their efforts are focussed on building and launching their own communications satellite in 1981, performing transmission experiments with other nations, including France, Germany, and Japan and buying their first operational satellite from the United States 'under proper conditions'."

Dr. Edelson added that the People's Republic of China's "work in structures, thermal control, electric power, propulsion, and stabilization all seems to be advancing well . . . We saw quite advanced work at the component . . . level, including, to our surprise, development and testing of traveling-wave tubes, solid-state amplifiers, wave-guide filters, and microwave integrated circuits."

In an interview that Dr. Edelson gave to Dr. Delbert D. Smith, Editor of *Satellite Communications*, during a return flight from the China trip, he was asked what he considered the prospects for future cooperation between the United States and China. He responded in part, " . . . There are possibilities for joint or cooperative experiments. For example, in communications, propagation measurements and transmission tests; and in meteorology and earth resources, in the analysis and comparison of space observations with 'ground truth.'

" . . . There are commercial opportunities for doing business with China," Dr. Edelson continued. "They have explicit plans for developing and building a communications satellite system with opportunities for U.S. firms to provide equipment for both the space and earth segments. There may well be possibilities in meteorology and earth resources systems as well.

" . . . Although we did not explore it, there was mention made several times of possibilities for joint ventures between American industry and Chinese organizations to develop entirely new capabilities and systems. I should go back at this point and indicate that the purpose of the trip under AIAA sponsorship was limited to scientific and technical exchange, but none of us could help making the observation, such I have just made, that the exchange of scientific and technical information is a good step which can well lead toward cooperative enterprises of many types from experimental to commercial."

Dr. Smith also asked Dr. Edelson if China was what he had expected,

Dr. Burton I. Edelson, Vice President, Systems Technology Services, at the Great Wall with two members of the People's Republic of China armed forces.

AIAA group on a trip to China

He replied, "In some ways, yes of course, but I observed many things and had experiences I certainly wasn't prepared for . . . Everyone knows, for example, that China is big and has a large population. It's the size of the U.S. and has more than 900 million people, but the significance of this is only apparent when you're in the streets of a bustling city such as Beijing or Shanghai. The number of bikes on the street, and the traffic jams and crowds of bicyclists has to be seen to be believed. Chinese cooking is well known and appreciated in the U.S., but the real Chinese meals were fabulous. There's a tradition of friendship between Chinese and American people, but it goes beyond anything I heard or read of to experience the unfailing, outgoing friendliness, hospitality and courtesy that we received every place we went."

Three-meter receive-only and 10-meter earth stations photographed at the Nanjing Radio Factory. The three-meter dish is used to receive direct broadcasts from a Japanese broadcast satellite. The 10-meter dish was built for experiments with INTELSAT and Symphonie satellites.

Network Bits
Field Correspondents

Andover
Joanne Witas
Brewster
Dorothy Buckingham
Etam
Bev Conner
Jamesburg
C. B. Marshall
Labs
Norma Broughman
Joan Prince
Blaine Shatzer
MCE Rockville
Shari Properzio
M & S Center
Darleen Jones
New York
Stephen Keller
Pago Pago
Michael Walker
Paumalu
Bob Kumasaka
Plaza
Mary Lane
Santa Paula
Terri Myers
Southbury
Dolores R. Raneri
Tele Systems
Barbara Maddox

BREWSTER. Two employees at Brewster, **Jack Wohlford** and **Jerry Bowes,** received their ten-year service awards in 1979.

We welcome four new employees who joined us late in 1979: **Linda Raye,** utilityperson, who has worked as a tour guide at our Visitors Center for several summers; we are happy to have her as a permanent member of our family; **Gene Conkle,** electronic technician, is retired from the U.S. Navy, and he, his wife, **Audrey,** and children live in Omak; **George Breindel**, electronic technician, and his wife, **Donna,** came to Washington State from California and live in Tonasket; and **Mark Hofmann, Jr.,** facilities mechanic, who is the son of **Melvin Hofmann** who has been a COMSAT employee at Brewster since 1968. Mark, his wife, **Jerri,** and little daughter live in Pateros.

Our annual CEA Christmas Party was held at Law-Mor's Restaurant in Omak, with most of the off-duty personnel and their spouses attending. We were pleased to have **Wally** and **Doris Lauterbach, Jean** and **Bill Cook,** and **Dewey** and **Rita Martin** join us for the evening. Wally, Jean and Dewey are former members of the Brewster staff. During the evening, a gift was presented to **Melvyn Tate.** Melvyn has accepted a position with SBS at Castle Rock, Colorado. We will miss "Mel" and we wish the best for him, **Dolly** and children.

—**Dorothy Buckingham**

ETAM. The ECEA sponsored a dinner at Alpine Lake in December. T-bone steak was the entree. The evening was enjoyed by all in attendance.

Christmas gifts were again purchased by the ECEA for all ECEA member's children ages 12 and under.

Reggie Thackeray, Sr. Electronics Technician, transferred to M. & S. after a short stay at Etam. Our best wishes go with Reggie.

An ECEA luncheon was held in the Canteen January 8. Ham and cheese sandwiches, potato salad and baked beans were served.

Bill Bell recently vacationed at Derry, New Hampshire.

Elfriede O'Hara, wife of **Mike O'Hara,** Senior Electronics Technician, received her U.S. Citizenship November 30. Elfriede was previously a citizen of West Germany. Our congratulations to Elfriede.

—**Bev Conner**

JAMESBURG. We welcome two new employees: **C. Lee Hayes,** Electronic Technician, currently working with Team A, a Navy retiree with more than 21 years of service. Lee resides in Pacific Grove with his wife **Geri.** They have four daughters: **Vicki,** married; **Cindy,** 13; **Mary,** 11; and **Leslie,** 7.

Walter R. Fett, electronic technician, currently working with Team C, was recently separated from the Navy where he received his electronic training. His favorite sports are tennis, hiking, swimming, baseball and jogging. His hobbies are woodwork, pottery and motorcycle riding. Walter is single.

Mr. Fred Womble, Pacific Gas & Electric Company's Marketing Manager (left, below), presented Jamesburg with the 1979 Energy Conservation Award. **Walter Robinson**, Station Facilities Engineer, is shown accepting the award as **A. J. Stotler**, Station Manager, looks on.

Jamesburg held its annual CEA Christmas party at the Holiday Inn in Carmel Valley. Retirees **John Scroggs,** with his wife, **Louise,** and **Roy Scheiter** and his wife, **Betty,** joined the regular COMSAT and AT&T employees and guests.

Jim Vinneau, former Senior Facilities Mechanic at Jamesburg, is currently conducting a five-day Cryogenic Course for the Facilities Department. Jim is Applications Engineer for the M & S Center in Washington. **Laverne Oliver** and **Jeff Johns** are the facilities personnel receiving the Cryogenic Course.

—**C. B. Marshall**

LABS. **Gayle Davis** managed for the first time the Covec Volley Ball Team in Gaithersburg City League. She kept the team going well in spite of a shortage of COMSAT women and a surplus of men players. Season record 18L-9W.

The Labs Christmas Party for the kids was a huge success with **Roy Waldt** as Santa and **JoAnn Wagner** as Mrs. Claus. They had a turnout of about 200 kids. Thanks to all who made this a terrific success.

We're happy to see **Brenda Gray** back in Personnel after the recent birth of her son. Also welcome back

to **Diane Lusby** who is now back at work in the Communications Processing Labs.

The mail room welcomes **Mark Goodwin** aboard, and is still praying for the arrival of the Xerox 9400. (Aren't we all!)

JoAnn has been selected to be the Labs representative as a member of the support staff for the 9th International Meeting of Signatories, which is being held at the Contemporary Resort Hotel in Orlando, Fla., March 26 to April 6. **Larry Sparrow** has been nominated for the "Traveller of the Year Award" by the Applied Sciences Lab.

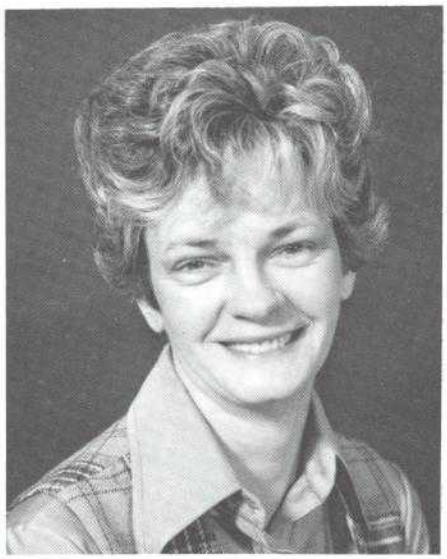
Congratulations to **David** and **Brenda Rogers** on the birth of a son, **Samuel David,** born on December 30, weight 8 pounds, length 22-1/2 inches (just in time to qualify with IRS as a dependent). David works in the Propagation Department at the Labs. Also, congratulations to **Fred** and **Carol Rieger** on the birth of a daughter, born on November 23, 1979, weight 6 pounds, 13 ounces.

On Dec. 7 a bridal shower was held in the Executive Dining Room for **Jackie Cornell,** given by **Colleen McGrady.** Jackie, who worked in the mail room, married **Bill Dixon** who had worked in drafting. A surprise baby shower was held for **Olivia Piontek** on January 16, 1980. **Joan Wilhoite,** a former COMSAT employee, drove up from Troutville, Va., to attend Olivia's shower.

Karen and **Bill Updike** had a baby girl, **Sara Louise,** born on December 28th, 1979, weight 8 pounds, 5 ounces.

Glad to see **Bud Bell** back after having surgery, and wish speedy recovery to **Steve Beall** after his auto accident.

Applause, applause, to the exciting musical talent of "Ensemble," composed of **Dick Porter,** saxophone, flute, **Jim Proctor,** (Labs) lead guitar, **Dave Woodward,** (MCE) percussion, **John Lane,** drums, **Les Cameron,** keyboard (Plaza), and **Don Wess,** (non-Comsat) bass guitar. Also to **Page Heston** and **Roland Clark**, who entertained everyone with some foot-



JoAnn Wagner

stomping bluegrass music on guitar and banjo. Roland didn't let a broken string stop the show; he pulled out a spare and played on. We all appreciate the talent of these two groups. Thanks!

We understand that **Paul Fleming** fractured his arm playing Chess with **Bud Bell.** It *is* a tough, challenging game, but really!

Welcome to **Dave Mendis,** our new Cafeteria Manager who came aboard last fall.

COMSAT Labs has again entered a team in the City of Gaithersburg basketball league. The team plays Tuesday nights at Gaithersburg Jr. High School and is presently tied with Hershey's for first place with a 4 and 0 record. Members of the team are **Pete Carlton, Barry Cuzzo, Hamilton Hawkins, George Meadows, John Reisenweber, James Smith, Marvin Stanton, Skip Stanton, Greg Thomas, Dave Vanderhart, Alan Wang,** and **Melvin Ware. Rocky Lee** is the coach.

Among new hires at the Labs are: **Simeon Iliev, George Tough, Dora Beasley, Marie Young, John Effland, Martin Miller, Alison Sexton, Edward Pipkin, Elizabeth Boastfield, Steven Baker, Dan Wilcox, Paul Wilhelmsen, Ervan Hare** (transfered from TSI to Labs), **Bruce Troutman, David Carter, William Simmons, George Jones,** and **Walton Smith.**

—B.P.S.

M & S CENTER. Thirty-two Center employees enjoyed a Christmas dinner at the Great China Restaurant in Gaithersburg, Maryland on Thursday December 20th.

Congratulations to **Vito Visaggio** and wife **Paula** on the birth of a daughter born November 13th and named **Christina,** weighing in at 7 pounds, 2 ounces. Congratulations also, to **Clyde Fleming** and wife **Marion** on the birth of daughter **Virginia Marion** at 8 pounds, 12 ounces, on November 24.

We wish a speedy recovery to **Gary Barber** who is hospitalized with a collapsed lung at Prince William County Hospital in Manassas, Virginia. Gary is a Teletype repairman with M&S Center.

Congratulations to **Long Thanh Ngo** and **Phuong Tu Vu** who were married on Thanksgiving Day. A reception was held for them at the Szechuan East Restaurant in Washington, D.C., with about 15 members from the M&S Center in attendance for a sit down dinner.

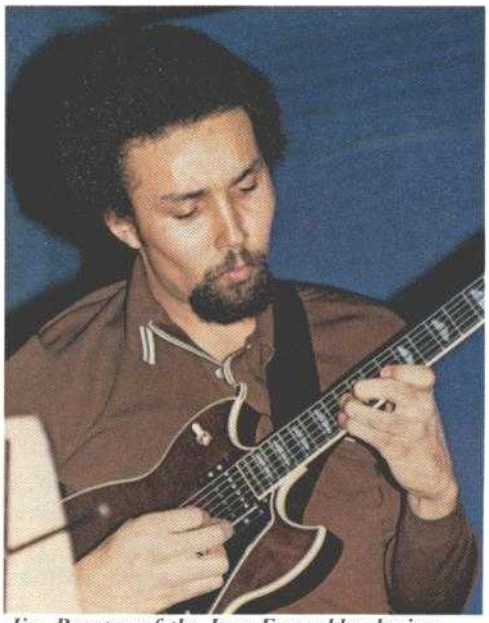
New employees at M&S are: **Skip Stanton** who transferred from the Labs to a Sr. Material Controller Specialist position; **Reginald Thackeray** who transferred in from Etam earth station as a Logistic Controller in the Supply Section; **Kenneth Harris** formerly with Frederick Electronics became our latest member of the M&S family, filling the position of Inventory Controller.

The M&S Center has purchased the second van for use in transportation of cargo to airports, pickup, etc. The Ford long-body, heavy-duty van is a great asset for our facility.

—Darleen Jones

PAUMALU. One of the worst storms to hit Hawaii in many years battered the island chain with rain and high winds during the week of January 7, causing widespread damages on all of the islands. The Paumalu station was spared any major damage, other than fallen branches, and rocks and mud slides

(Continued on page 28)



Jim Proctor of the Jazz Ensemble playing the electric guitar.

Some of the members of choral group Jerry Breslow & Company under the direction of who else but Jerome W. Breslow, left, Corporate Secretary.

PHOTOS BY MICHAEL K. GLASBY

AN UPBEAT EVENING WITH THE

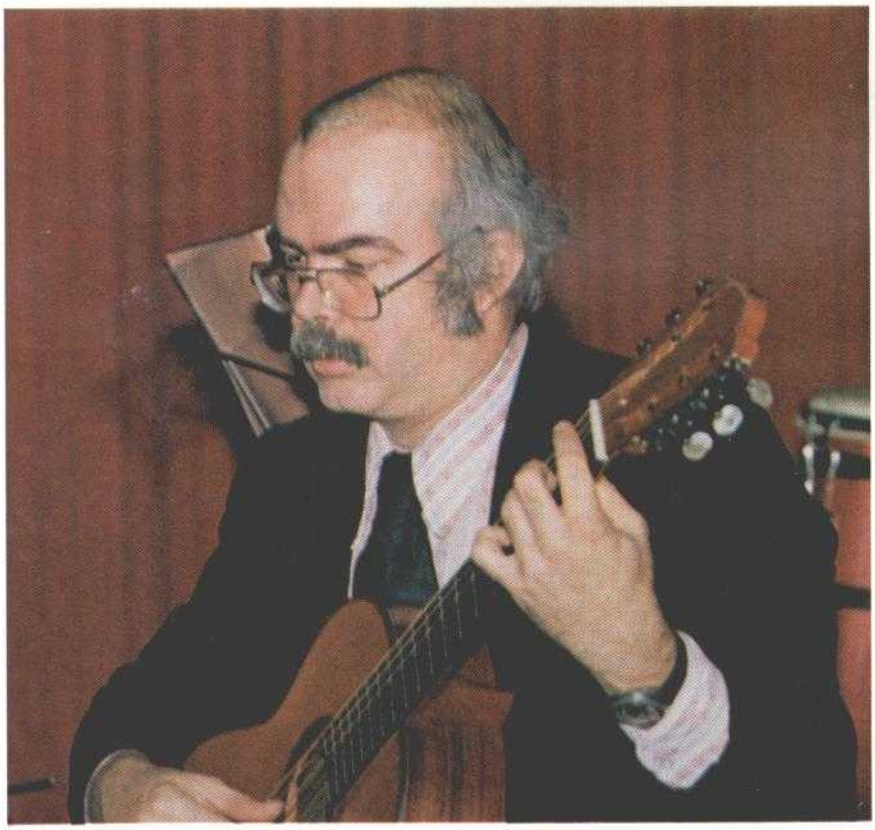
The Music Appreciation Club presented its Annual Christmas Presentation to a standing-room-only audience after business hours on December 19. Both singers and instrumentalists performed, and the audience loved it.

Coni Dean, President of the Music Appreciation Club, and leader of the gospel group Genesis I sings a solo.

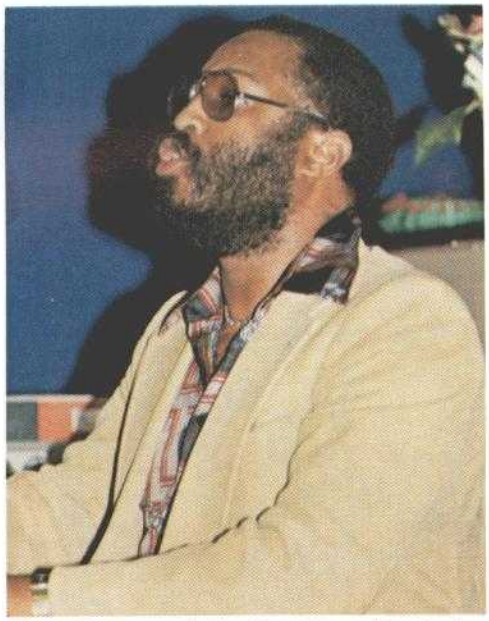
Jeff Corry, lead singer, is backed up by, from left, Claudia Toy, Cynthia Clarke, and, at the piano, wife M. Beth Corry.

The gospel group Genesis I under the direction of Coni Dean, at piano, performs to an appreciative audience.

MUSIC APPRECIATION CLUB



Dave Arnold played three different string instruments, both in solo and as the accompaniment for singers. Here he plays the guitar.

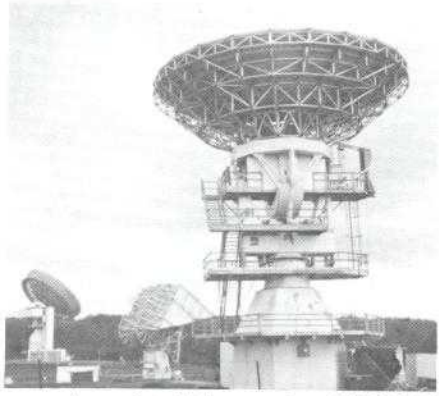


Les Cameron of the Jazz Ensemble singing and playing at the keyboard.

(Continued from page 25)

which blocked off a portion of the access road to the station. With commercial power down for the better part of four days, the station maintained operations with the standby diesel generators. Station employees went unscathed through the stormy week in commuting to and from work, and at home where only a few employees reported minor damage.

The INTELSAT V Upgrade Program at Paumalu is nearing completion. Installation of equipment commenced in late November 1979 by MCE per-



sonnel, assisted by station TTC&M personnel.

Tom Kaneshiro, Sr. Electronic Technician, was presented with his Ten-Year Service Award in January by the Station Manager.

Passers-by on Kam Highway who look up toward the hillside overlooking the famed Sunset Beach, can now see another antenna (left) which is the latest addition to the COMSAT/INTELSAT family of antennas located at the Paumalu site. The 52-foot antenna, when completed in the next few weeks, will be used to provide TTC&M services to INTELSAT. The family of antennas at the station include: Pam-1; Pam-2; 42-foot "sugar scoop"; MARISAT; and the latest TTC&M antenna. **—Bob Kumasaka**

The following employees will have completed Five, Ten or Fifteen years of service with COMSAT during January and February 1980:

JANUARY

Fifteen Years

Arnold W. Meyers (Plaza).

Ten Years

William H. Connor (Plaza), William H. McGuire (Plaza), Robert N. Ely (Palo Alto), Thomas M. Kaneshiro (Paumalu).

Five Years

Ardella Lewis (Plaza), Margaret G. Durham (Plaza), Yvonne C. Dupree (Plaza), Michael L. Jeffries (Plaza), Paul M. Coelho (Rockville).

FEBRUARY

Ten Years

Nancy E. Weber (Plaza), Martha C. Shirley (Plaza), Irving R. Drill (Plaza), John L. Martin, Jr. (Plaza), Herbert A. Hanson (Plaza), Jo Ann Wagner (Clarksburg), Gordon E. Bush, (Clarksburg).

Five Years

Luz P. Cunanan (Plaza), Samuel E. Dixon II (Plaza), Jera D. Bradford (Plaza).

PLAZA. **Terry Powell** has transferred to Satellite Orbital Control and Monitoring Dept. from the COMSAT GENERAL Control Center. Congratulations are due **Pam** and **Bob Dahlgren** on the birth of their first child, **Christine Nicole,** who was born December 18, 1979. She weighed seven pounds, four and three quarter ounces, was nineteen and one-half inches long, and, according to her dad is worth more than the tax exemption.

Hale Montgomery, Dir. of Business Promotion/Market Services, Comsat General, has been elected Treasurer of Donaldson Run Civic Assn. in Arlington, Va. Hale also has been reappointed to the Travel Committee of the National Press Club.

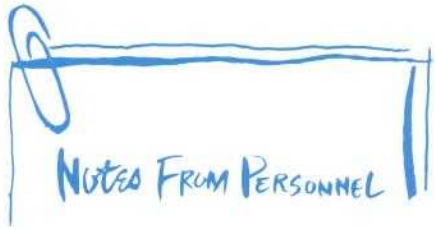
—Mary Lane

SOUTHBURY. In our "comings and goings" department, **Denis Bouchard** (old blue) has transferred to SBS as station engineer at their Maryland Station. He will be missed by all of us. **Christopher Werba** is our new part-time building custodian. **Ann Mancini** has joined the ranks of the magnificent seven (The Marisat Operators).

Our Christmas Party was the usual success with almost 100 percent attendance. The station resembled a botancial garden this holiday season. Floral arrangements were received from Tuna Fleet Management and also from Paul and Byron onboard the *Tiger Seal.* A poinsettia was sent to each of the "magnificent seven" from El Paso Marine Company. Due to the thoughtfulness of our friends at Satellite Services the operators receive a bouquet of flowers every Monday.

Warm holiday greetings were received from the Royal Family of Jordan (Queen Nohr and King Hussein). A photographic memento sent to each of us will be treasured by their friends at Southbury.

—Dolores R. Raneri



(Continued from page 18)

1980. Since I wrote those words, Management decided to give us one more holiday—Friday, December 26.

* * *

If you've moved, please make sure your supervisor submits an updated profile form to Personnel. In addition, make sure your new address is submitted to the Credit Union and to the Payroll Department. If you have changed states, you will also need to submit new Withholding Exemption Certificates to Payroll as well.

CALENDAR

of conferences and exhibitions

A schedule of principal conferences and exhibitions at which the Corporation and its subsidiaries will be participating. At this writing, information on some of the events is not complete. Incomplete listings will be updated in subsequent issues.

MARCH

3-4, Seminars on Disposal of Hazardous Wastes, Sponsor: Chemical Manufacturers Association, Jack Tarr Hotel, San Francisco, Calif., Participating Unit: ERT.

17-20, Interface '80, Miami Convention Center, Miami Beach, Fla., Participating Units: International Communications and TeleSystems.

23-25, Annual Meeting of the National Petroleum Refiners Association, Fairmont-Marriott Hotel, New Orleans, La., Participating Unit: ERT.

25-26, Technical Basis For A Size-Space Specific Particulate Standard, Sponsor: Air Pollution Control Association, Ferncroft Hotel, Danvers, Mass., Participating Unit: ERT.

APRIL

8-12, Satellite '80, Palais des Expositions, Nice, France, Participating Unit: COMSAT General.

21-24, AIAA Communications Systems Conference, Sponsor: American Institute of Aeronautics and Astronautics, Hyatt House Hotel, Orlando, Fla., Participating Unit: Research and Development (Labs).

MAY

5-8, Offshore Technology Conference, Houston Astrodome, Houston, Texas, Participating Units: COMSAT General, ERT.

5-11, AIAA Annual Meeting, Sponsor: American Institute of Aeronautics and Astronautics, Baltimore Convention Center, Baltimore, Md., Participating Unit: Research and Development (Labs).

13-15, 33rd Annual Conference & Telecommunications Exposition, ICA, Sponsor: International Communications Association, Cobo Hall, Detroit, Mich., Participating Units: International Communications, COMSAT General, TeleSystems.

18-21, National Cable Television Association, Dallas Convention Center, Dallas, Tex., Participating Unit: International Communications.

JUNE

8-11, International Conference on Communications, Sponsor: Institute of Electrical & Electronics Engineers, Inc., Seattle Center, Seattle, Wash., Participating Units: Research and Development (Labs), COMSAT General, TeleSystems.

8-11, Annual Meeting, American Association of Petroleum Geologists, Denver, Colorado, Participating Unit: ERT.

22-27, 73rd Annual Meeting & Exhibition, Air Pollution Control Association, Place Bonaventure Exhibition Hall, Montreal, Canada, Participating Unit: ERT.

24-26, Armed Forces Communications & Electronics Association (AFCEA), Sheraton Washington Hotel, Washington, D.C., Participating Units: International Communications, COMSAT General, TeleSystems.

28-July 4, National Association for the Advancement of Colored People (NAACP), Miami, Fla., Participating Unit: COMSAT Personnel.

JULY

14-18, The 1980 Conference on Improving Data Quality, Sponsor: American Society for Testing & Materials, Johnson, Vermont, Participating Unit: ERT.

AUGUST

3-6, National Urban League, New York Hilton Hotel, New York, N.Y., Participating Unit: COMSAT Personnel.

SEPTEMBER

23-26, TCA, San Diego, Calif., Participating Units: International Communications, COMSAT General, TeleSystems.

23-25, Navigations/Communications & Weather Conference (NAVCOM), Sponsor: Maritime Association of the Port of New York, Downtown Athletic Club, New York, N.Y., Participating Unit: COMSAT General.

OCTOBER

21-24, European Offshore Petroleum Conference and Exhibition, Earls Court, London, England, Participating Unit: COMSAT General.

NOVEMBER

10-14, International Telecommunications Exposition (Intelcom '80), Horizon House International, Los Angeles Convention Center, Los Angeles, Calif., Participating Units: COMSAT General, TeleSystems.

30-Dec. 4, National Telecommunications Conference, Sponsor: Institute of Electrical & Electronics Engineers, Inc., Houston, Tex., Participating Unit: Research and Development (Labs).

SATELLITE Pathways

Second Issue/1980
Volume 5 Number 2

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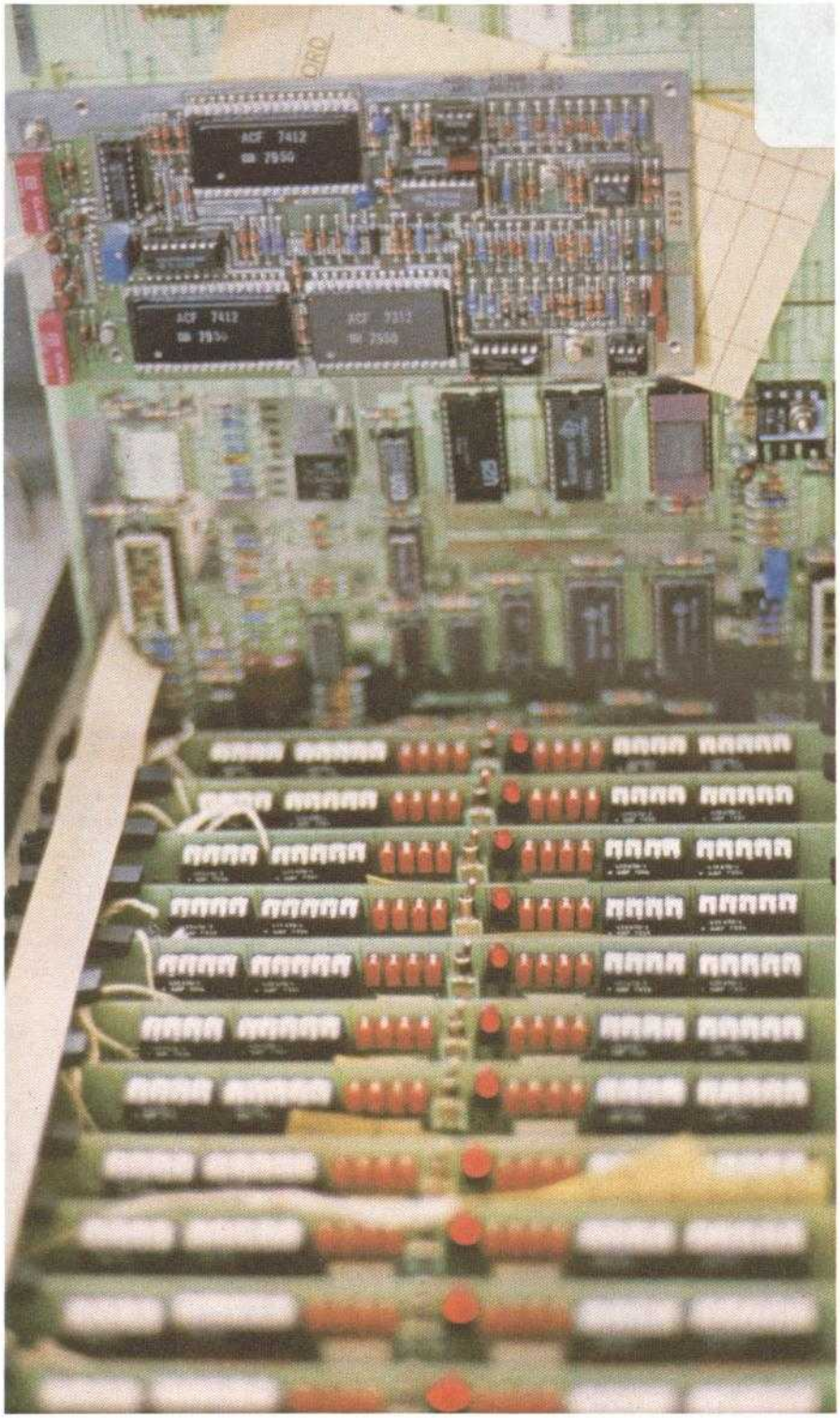

COMSAT COMMUNICATIONS SATELLITE CORPORATION
COMSAT GENERAL CORPORATION

SATELLITE Pathways

Second Issue/1980
Volume 5 Number 2

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CONTENTS

Cover. Scenes of COMSAT GENERAL TELESYSTEMS. Left: EC-3000 Echo Cancellers undergoing 48-hour burn-in test. Top right: Bob Alexander setting up automatic insertion machine. Middle: The sign on the front door of the TeleSystems Administration Building. Bottom right: touch-up work on EC-3000 printed circuit (PC) boards; from the right: Barbara Floyd, Martha Ward, Martha Smith, Margie Byrd, Linda Bibb, and Diane Allen. Photos by Bill Megna.

The TeleSystems Manufacturing Building as photographed at night.

PHOTOS BY BILL MEGNA

COMSAT GENERAL TELESYSTEMS, on an avenue known as 'Prosperity'

IF YOU'RE INCLINED to believe in prophecy and omens, you might wonder if there were a grand design involved in choosing the home for TeleSystems, COMSAT GENERAL's newest subsidiary. TeleSystems' four and one-third acre office and manufacturing complex is located on Prosperity Avenue, in the Prosperity Business Campus, an industrial park in the Virginia countryside approximately 15 miles outside Washington.

Judging from the success of one of TeleSystems' first products, the EC-3000 Echo Canceller (over 3,000 units delivered and over 1,800 more on order), prosperity may be just around the corner in more than the geographical sense. After just one year of production, the EC-3000 has captured most of the market demand for this kind of equipment.

The HP 3000 used for both financial management and manufacturing management with Erving Swann at the computer console. Behind him: Jackie Merkert.

That's quite an accomplishment for a company carrying out COMSAT GENERAL's first foray into the telecommunications hardware market. TeleSystems' purpose is unique within COMSAT GENERAL and so are the expressions used by top management in describing the company's goals. Aggressiveness, credibility, producibility, reliability, market emergence, market penetration—it's a new and provocative vocabulary.

See "The making of an Echo Canceller," pages 2 and 3, and "What does the Echo Canceller do?" page 5ff.

Says Lewis S. Norman, the former TeleSystems Executive Vice President and General Manager, "TeleSystems

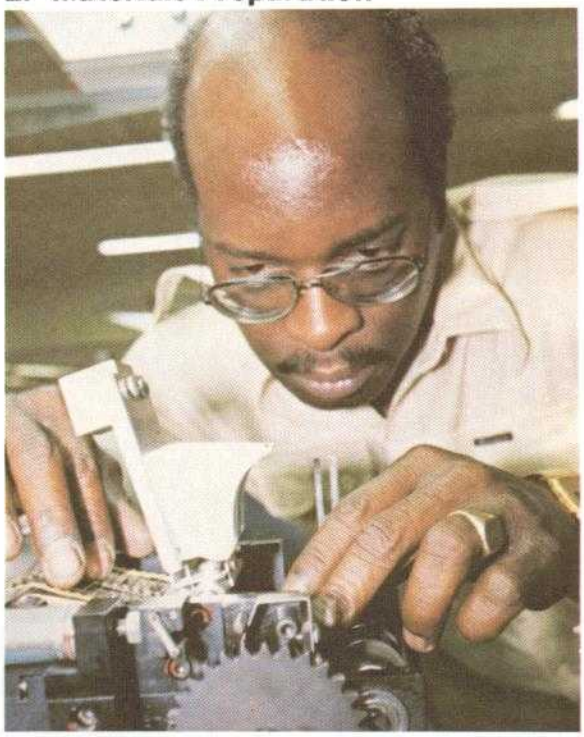
(Continued on page 4)

The making of an Echo Canceller,

1. Shipping and Receiving

All incoming material is opened and checked against purchase order. From left to right, TeleSystems employees Dave Perez, Tom Bowman and Dan Fetterolf.

2. Materials Preparation



Components are prepared for automatic insertion machines, and printed circuit (PC) boards are serialized. TeleSystems employee: George Gray.

5. Soldering

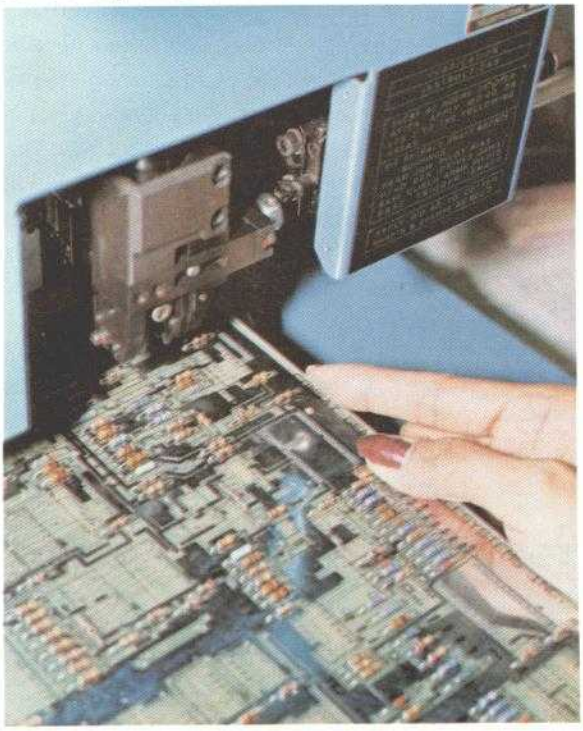
George Oomman operates the drag solder machine, which applies solder to PC boards.

6. Final Terminal, Standoff Installation

Darlene Blake hand-operates a device that inserts test point terminals into PC boards.

some of the major steps . . .

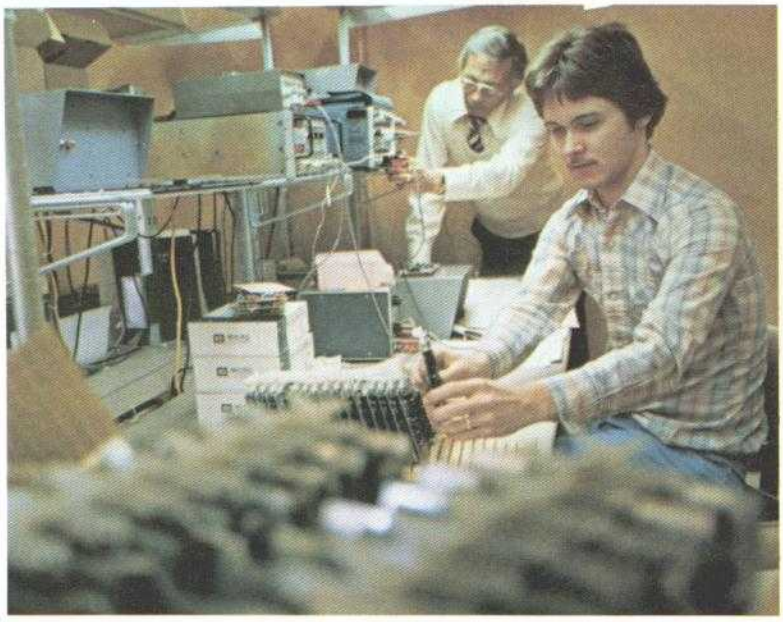
3. Component Insertion on PC Boards



4. Slide Line Assembly

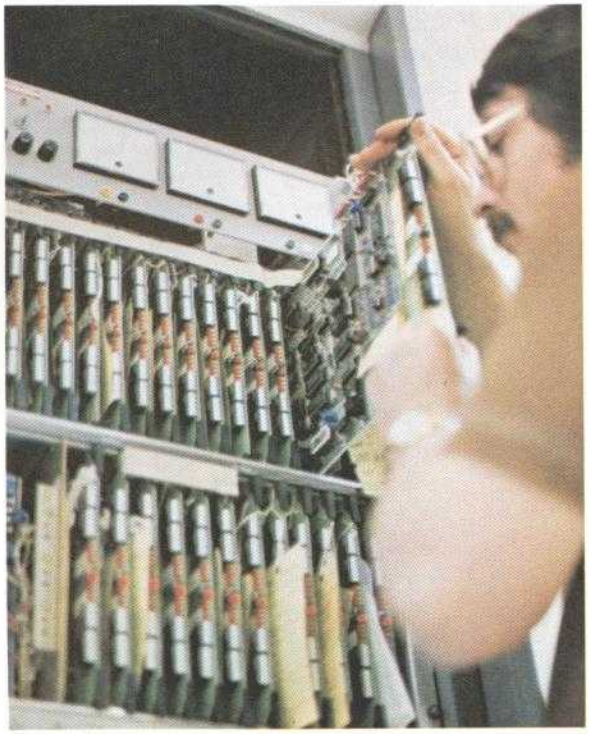
What automatic insertion machine can't do is done by hand in a slide-line operation. (Employee adds some components, then slides board to next person.) Left to right: Martha Ward, Barbara Floyd and Diane Allen, Supervisor, Manufacturing.

7. Pre Burn-in Test and Alignment



Clock boards for Echo Cancellers are being checked out by Tom Wellman, rear, and Phillip Newman.

8. Burn-in Test



For 48 hours the boards will have power running through them. TeleSystems employee: H. James Miller.

TELESYSTEMS

(Continued from page 1)

is small, just 130 employees, but based on its success so far I expect that it will be able to contribute to the profits of the parent company within a relatively short time."

While COMSAT GENERAL's proven communications expertise provides the foundation upon which TeleSystems' management hopes to build the company's success, it has been necessary to provide the structure by planning the evolution of products in a natural and logical sequence. As the company's Vice President of Marketing, Bob Shea, tells it, "It's no accident that we started the business with the echo canceller and are now involved in the introduction of Time Division Multiple Access (TDMA) equipment. The 'canceller' is a product of the stand-alone component-level type. TDMA is a significant step up in the hierarchy of communications equipment; it is a fairly complicated subsystem-level product used to manage and control digital traffic flow between earth stations." It's this type of logical progression that the company executives view as essential to their controlled emergence as a competitive factor in the telecommunications equipment business.

". . . All our products are designed and packaged using computer-aided-design equipment to further the goals of producibility and reliability. Yet for all this technology, it's the people who are the key. They make it happen."

A. W. (Bill) Perigard

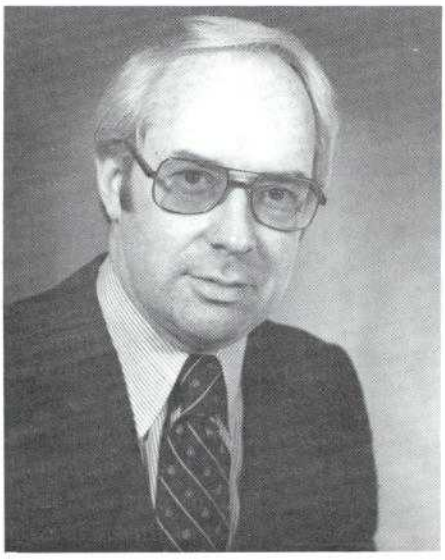
And TeleSystems knows how to compete. In addition to its track record with the Echo Canceller, TeleSystems is one of the finalists selected to develop specifications for, and is under consideration to provide, TDMA equipment for the Telecom 1 satellite system to be used by the French Ministry of Post and Telecommunications.

What is it going to take for TeleSystems to continue to make inroads into markets not presently served by COMSAT GENERAL?

"It's important that we don't delude ourselves into thinking we're not in a very competitive environment," former Executive Vice President Norman said. "Some of our well-established competitiors manufacture equipment that does virtually the same things as our products. We have to convince customers, and potential customers, of the better value in terms of reliability, adaptability and performance represented by TeleSystems' products."

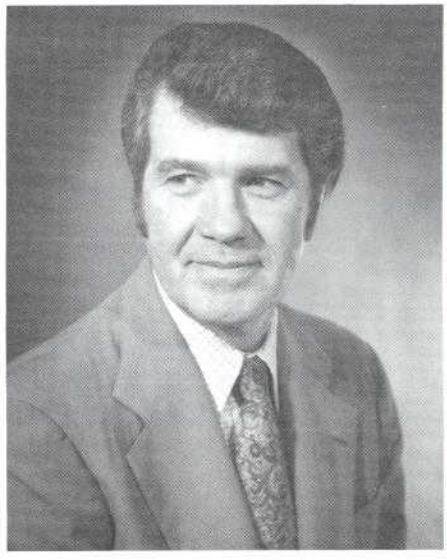
Using the EC-3000 as an example, Marketing Manager Victor Schendeler explained that the canceller represents an alternative to other echo control technologies available. "Although it costs more than an echo suppressor, it provides higher quality service," he said. "I don't think anybody should be surprised to see a high performance product from a COMSAT GENERAL subsidiary, but our price/performance improvement over lower cost methods has to be sold. We try to tell customers that since the EC-3000 requires no adjustment and less maintenance, they'll see real savings in reducing operating costs."

"It's the most advanced and effective echo control device available in



A. W. (Bill) Perigard is Executive Vice President and General Manager, COMSAT GENERAL TELESYSTEMS.

Gary L. Richard is Vice President, Finance and Administration.



Robert J. Shea is Vice President, Marketing.

quantity today," said Bill Perigard, new Executive Vice President and General Manager, "and we're not resting on our laurels with the 3000. We're well under way with preparations to introduce the EC-4000 this summer and currently have accepted orders for 2000 units with shipments scheduled to commence on August 1."

"We describe this model as 'CTO standard'," said Packaging and Manufacturing Engineering Manager George Corbin. "That means that in central telephone offices (CTOs)—where there are currently thousands of echo suppressors mounted in shelves—our EC-4000 can be substituted one-for-one. You just have to pull a suppressor from the chassis, plug in an EC-4000, and you're back in business with an Echo Canceller."

Designed almost entirely by TeleSystems engineers, the EC-4000 is about 40 percent smaller and consumes about 60 percent of the total power used by the EC-3000. Customers will realize substantial power and space savings with the EC-4000.

The EC-4000 is but one example of TeleSystems' forward-looking engineering design philosophy. Director of Product Engineering Bill Wolfe discussed his plans for developing products that are not only innovative, but also possess the inherent reliability required by the telecommunications industry. "This will be accomplished," Wolfe said, "through extensive use of the latest automatic test equipment in both the engineering laboratories and the manufacturing facilities. Further, the use of computer-aided design (CAD) techniques minimizes the time required to configure printed circuit boards and results in increased component densities as compared with manually-designed boards."

Both computer-aided manufactur-

(Continued on next page)

What does the Echo Canceller do?

What function does the Echo Canceller serve in the world of telecommunications? Victor Schendeler, TeleSystems Manager of Marketing, recently addressed himself to that question in the Telecommunicator, *TeleSystems' employee publication. The explanation that follows is based on Schendeler's article. The drawings also are based on some of those used in the* Telecommunicator:

THE SIMPLEST CONNECTION between two telephone sets is with two wires. Initially, all telephone sets were connected this way. The problem with such an arrangement is that the longer the wire connection between sets the more feeble the received signal.

Someone came up with the idea of putting an amplifier in the line to keep up signal strength. An amplifier is a device that makes junior's electric guitar when it's played in the upstairs bedroom sound as if it is the Concorde supersonic jet transport landing on the roof.

Amplification is simple enough to understand if we are talking about a system that works in only one direc-

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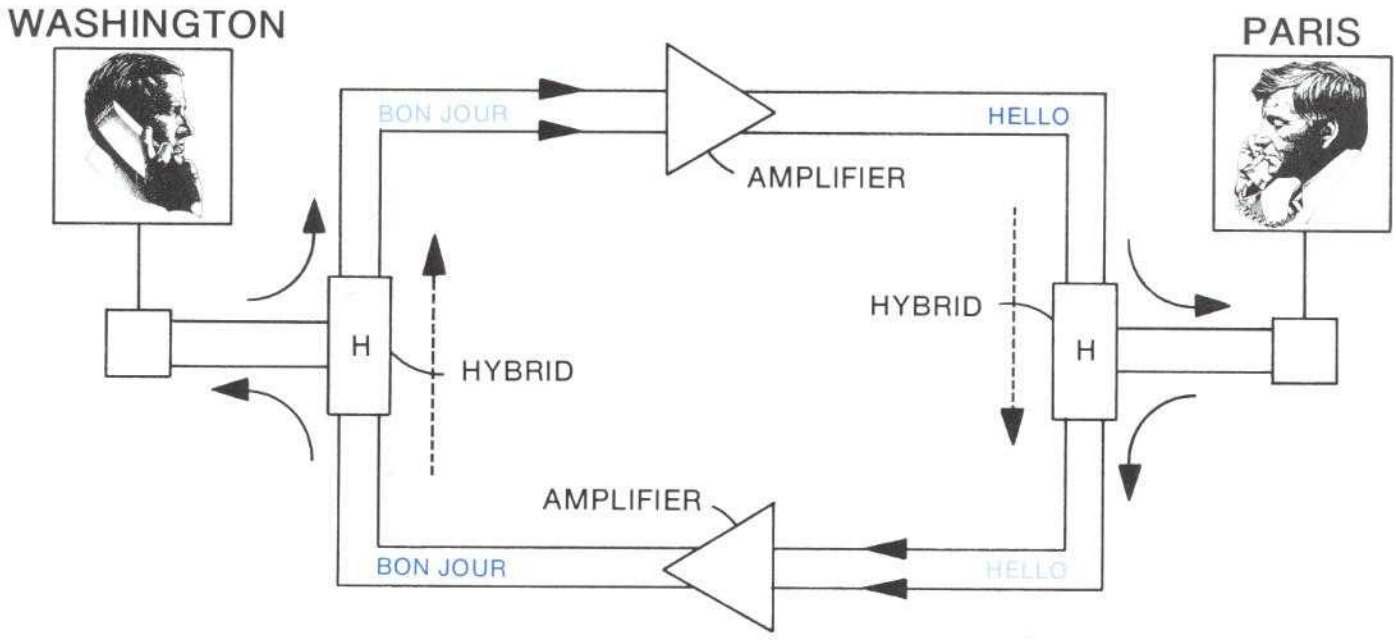


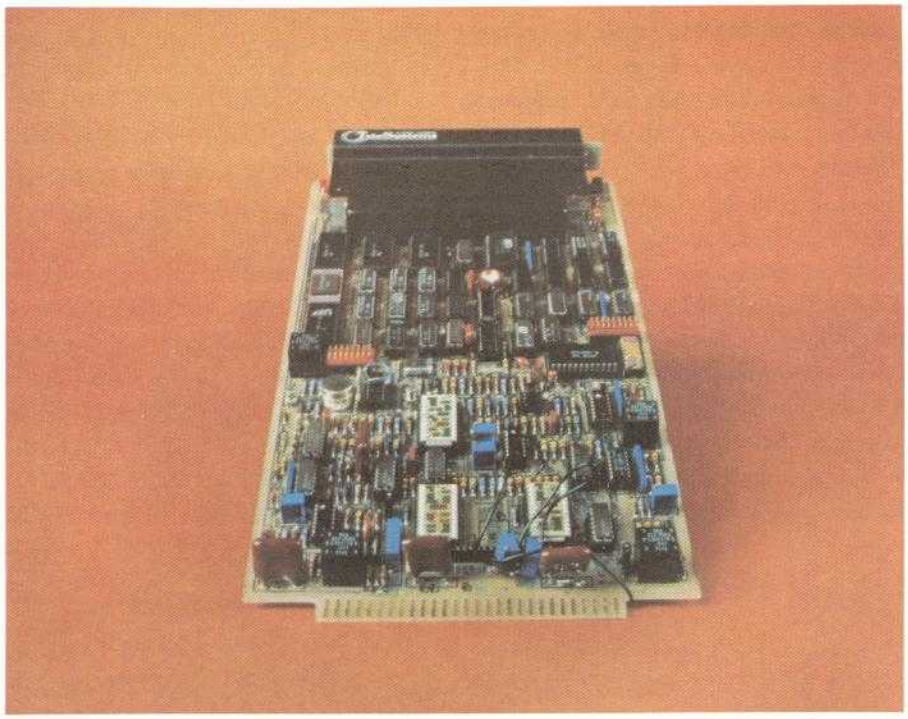
TELESYSTEMS

(Continued from page 5)

ing (CAM) and CAD techniques are used to free employees from time-consuming, mechanical tasks and allow them more time to concentrate on quality and product improvements.

TeleSystems' employees don't have to be instructed in the benefits of searching for improvements. As Personnel Director Linda Neely explained, "Most of our employees have come from industries where 'building a better mousetrap' was the name of the game for survival."

At TeleSystems, it is in Manufacturing Operations that the 'better mousetrap' takes shape and eventually becomes a salable piece of telecommunications hardware. As Executive Vice President Perigard explains it, "Right from the start, we planned to use modern yet proven



Designed almost entirely by TeleSystems engineers, the EC-4000 is about 40 percent smaller and consumes about 60 percent of the total power used by the EC-3000. Customers will realize substantial power and space savings with the EC-4000.

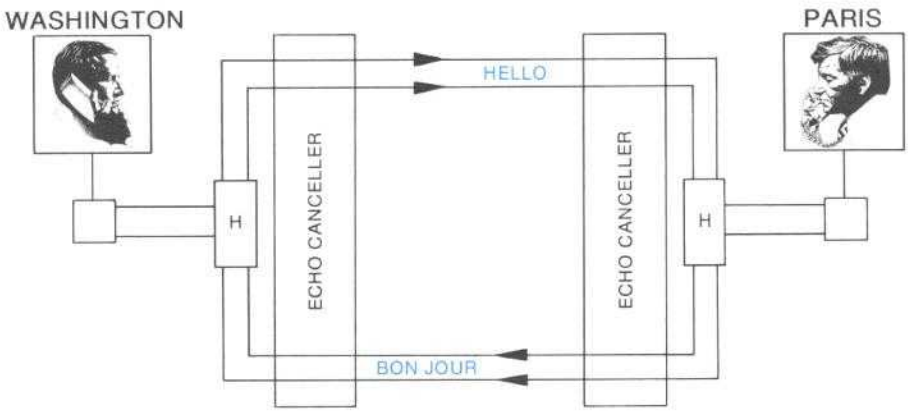
ECHO CANCELLING

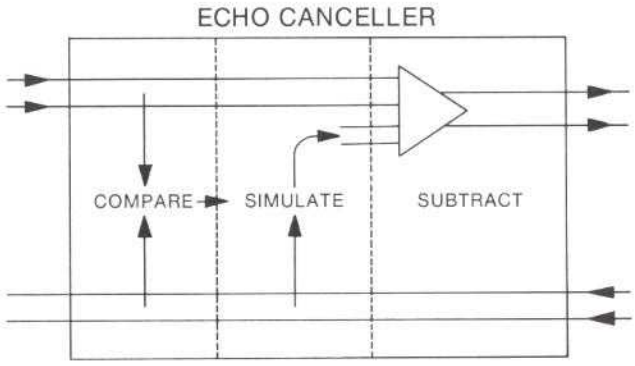
(Continued from page 5)

tion. In a telephone conversation, however, we are talking about signals moving in two directions, both of which must be amplified. To make possible two-way communications with amplification, the managers of telephone systems found it necessary to use four wires, two coming and two going.

At the time that the four-wire approach was conceived, the telephone was already well established, but it had been engineered to work on only a two-wire connection. In order to make the two-wire telephone set work with a four-wire system, telephone companies began using what are called hybrids.

The drawing on page 5 shows the function of the hybrid as well as a problem with them. The hybrid closest to the telephone set in Washington sees that speech signals coming on the receive wires from Paris





technology in the design and manufacture of our products. It's the only way we knew to produce hardware that would meet the stringent availability requirements demanded by the satellite telecommunications community. The physical plant itself was designed with this in mind. Manufacturing inspection and test equipment has been selected to eliminate time-consuming repetitive manual operation. Methods have been designed to take the maximum advantage of our capital equipment selections. All our products are designed and packaged using computer-aided-design equipment to further the goals of producibility and reliability. Yet for all this technology, it's the people who are the key. They make it happen."

Into this environment flows an assortment of engineering documentation in the form of specifications, schematics, drawings and parts lists. "From this documentation, we produce the detailed manufacturing drawings, procedures and methods necessary to manufacture, test and input our products," explains Corbin. "It's necessary that the manufacturing documentation be written to be compatible with the automatic equipment used on the manufacturing floor."

For example, Rogers Glenn, Manager of Functional Testing, revamps the specifications and the preliminary test procedures supplied by Engineering into production test procedures that detail the use of TeleSystems' automated test equipment to verify that each item manufactured lives up to TeleSystems' advertising.

It is the responsibility of Manufacturing Engineering Supervisor Norman Saah and his department to review the drawings, parts selection and layouts in order to develop methods that ensure producibility and efficiency. They also build a prototype to prove out the manufacturing and test methods and to determine the best ways to apply these methods.

"As we move along in the building of the prototype," said Saah, "we make every effort to keep instructions as near as possible to layman's language so that the people doing the manufacturing and assembly will have no questions about what they are supposed to be doing."

Equipped with the manufacturing drawings, methods and procedures, and specially assembled and prepared "kits" from the stock room, Manu-

(Continued on next page)

---

are all directed to the telephone set in Washington and that all signals coming from that set are routed on to transmit wires to Paris. The hybrid closest to the telephone in Paris performs the same functions.

This seemingly perfect system has one flaw. Instead of all signals proceeding exactly as the solid arrows indicate, some of the signal arriving from Paris at the hybrid does not go to the intended telephone set in Washington, but rather "leaks" into the wires going back to Paris (dashed arrows). The leaked signal is amplified just like any other signal on its way back to Paris. Meanwhile in Paris, some of the speech coming from Washington is leaked back into the wires going to Washington.

Because the lines are so long, it takes a certain amount of time for the signals to travel from Paris to Washington and vice versa. Because of the leaks, the person in Washington will hear himself saying "hello" and the person in Paris will hear himself saying "bon jour" after a delay of however long it takes the voice to reach its destination and then return. We call hearing our own voices after a detectable delay "an echo."

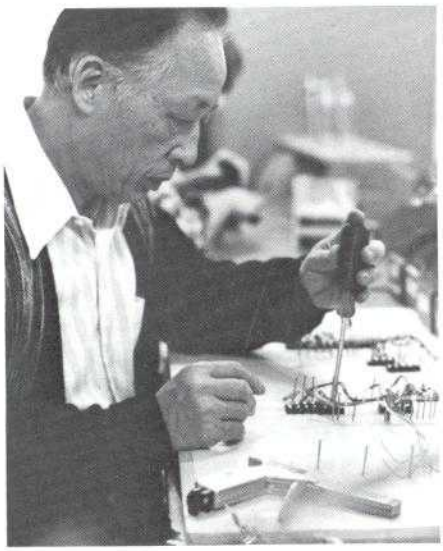
Now it will not be difficult to understand why echo can often be even more pronounced when the signals are proceeding via satellite than when cable is carrying the signal. In satellite communications, signals are going up to and down from an object about 23,000 miles out in space. The total path is thus at least four times 23,000 miles or 92,000 miles. That is a long way to travel and hence an opportunity for quite a delay.

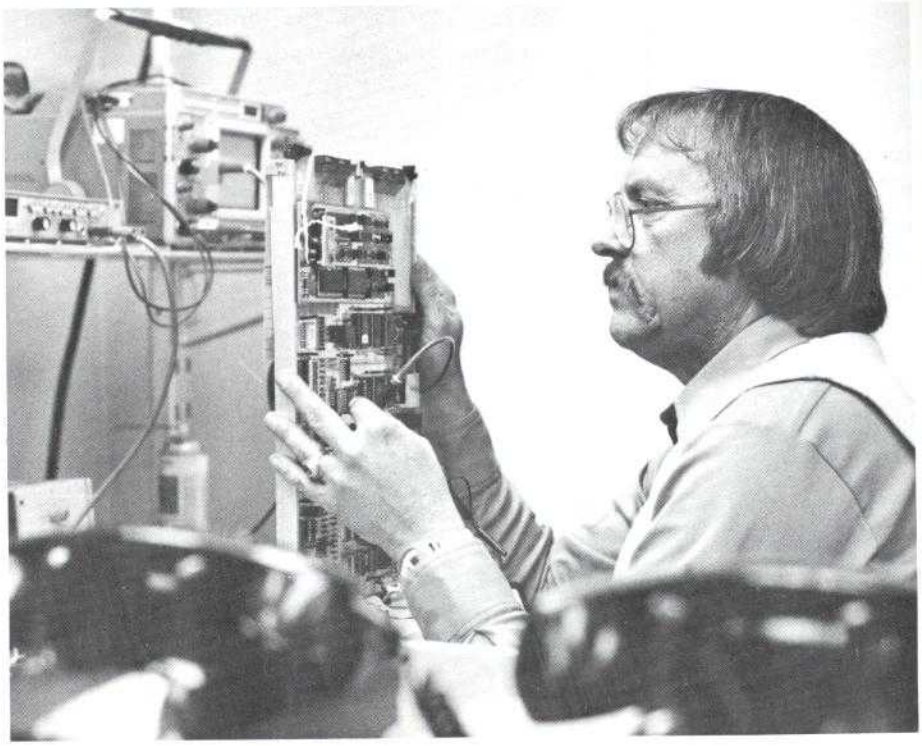
The Echo Canceller eliminates echo while permitting the desired signals to be received. How does it work? An Echo Canceller is installed in the four-wire portion of the telephone circuit. See the drawing on the opposite page. The Echo Canceller operating on the signal coming from Paris compares that signal with the one returning to Paris to determine how much leakage is coming through the hybrid. The Echo Canceller then electronically imitates or simulates the characteristics of the hybrid. The imitation or simulation is called "the model."

The Echo Canceller now takes a portion (sample) of the speech signal coming from Paris and puts it through the model at the same time that the original signal from Paris is going through the hybrid. If the model is a good imitation of what happens in the hybrid, then what comes out of the model should be the same as what comes out of the hybrid.

The output from the model is now electronically subtracted from the output from the hybrid. Since the model and the echo are the same, one cancels out the other, and we have cancelled the echo. The net result is that no echo signal is returned to Paris.

On the Paris side of the circuit, another Echo Canceller is installed which takes care of the echoes going back to Washington. Thus the entire two-way communication circuit is now echo-free.





Above: Chuck Chin building a harness for a power supply. Right: Jerry Hoopert doing service work on EC-3000.

TELESYSTEMS

(Continued from page 7)

facturing Manager John Curran's "assembly line" takes over and the product is transformed from an engineering description into a piece of finely-manufactured hardware. Manufacturing, as performed at TeleSystems, introduces the new concept of volume production to COMSAT.

There is much that could be written about the manufacturing process, but in this instance a photographic description would be more appropriate. On pages 2 and 3, a pictorial layout portrays some steps in the production of the EC-3000.

Although the manufacturing facility and its people are what makes TeleSystems different from other units of the COMSAT family, they are only part of the story. To operate as a stand-alone company, TeleSystems also has its own Finance and Administration department.

Gary Richard, the relatively new Vice President of Finance and Administration, has placed staffing as one of his highest-priority activities. These activities have paid off. His staff, which originally consisted of Pramod Gupte, Manager of Financial Services, William Voss, Manager of Information Systems, and Marcia Webb, Office Services Clerk, is now complemented by a number of recent hires. Some of these are Bill Cunningham, Supervisor of Office Services; Edith Johnson, Accounting Supervisor; Conrad MacCue, Programmer/Analyst; and Erving Swann, Computer Operator.

According to Richard, "The emphasis is now on designing and implementing a computerized Management Information System. This new system will provide all employees with quick, accurate data to enhance their job performance and will enable management to make decisions with a maximum of facts." An important component of this MIS is a newly installed HP-3000 computer system. Personnel throughout the company are eagerly awaiting the introduction of this new capability.

There is an air of enthusiasm that envelops TeleSystems, an enthusiasm at being involved in an exciting new venture. The old-timers around the Corporation recognize the feeling and can associate it with the days when Early Bird was a concept, the success of which could someday open up a whole new era of communications. It is an enthusiasm people develop from being able to see the end product, the results of their cumulative skills. And employees who are not content just to see the end product, but who would like to know what it really does for the world of communications, can pay a short visit to Jerry Hoopert in the test area at one end of the manufacturing bay. In an eagerly presented demonstration, the advantages of TeleSystems equipment are made obvious.

Although very much in its startup phase, COMSAT GENERAL TeleSystems nevertheless gives cause for optimism. Its Echo Canceller is meeting with success. Its entry into the international field of telecommunications systems with such offerings as TDMA is bearing fruit.

Technological aggressiveness, dedication, innovation and excellence will be the watchwords for TeleSystems as it strives to make true the prophecy of its locations on an avenue named "Prosperity."

NEWS

INTELSAT selects Australian firm as architect of its new headquarters

INTELSAT has selected an Australian architect to design its new headquarters building in Washington, D.C. (Related story on page 19.)

The winning architectural firm is John Andrews International Pty. Ltd., of Sydney, Australia. Andrews is a highly-regarded architect, whose innovative work is found in his native Australia, as well as in Canada and the United States.

The choice was made through an invited architectural competition, in which six architects were chosen to participate from a worldwide field with final selection by an INTELSAT assessment panel, which included a number of architects chosen with the assistance of the International Union of Architects.

The six architects, representing five countries, Australia, Canada, Finland, Germany and the United States, had in turn been selected from a total of 92 recommended architects from 23 countries.

The new headquarters has been designed for an 8-acre portion of a 12-acre site in northwest Washington, on Connecticut Avenue, between Tilden and Van Ness Streets, and adjacent to the University of the District of Columbia. This is part of the International Center complex. Less than half of the site will be initially developed, and at least 4 acres will remain as a permanent wooded public park.

This proposed site is owned by the U.S. Government, and arrangements are now being discussed for its lease to INTELSAT. It had originally been intended for occupancy by the Organization of American States, but they subsequently decided to locate elsewhere. The State Department has submitted draft legislation to the Congress which would permit it to make the site available to another international organization.

The new building will accommodate INTELSAT's offices, operations center, satellite control center, and other facilities as well as conference areas for the many international meetings which it hosts.

In accordance with INTELSAT's objectives, the proposed building will be a respectful complement to the natural environment of the site and will reflect the organization's leadership in space and communications technology. The winning design combines advanced energy efficiency concepts with a highly human architectural design.

The entire building is composed of a series of 85 × 85-foot octogonal elements ("pods"), each about 4 or 5 stories high, and all arranged to form a series of continuous interior

(Continued on next page)

John H. Heck, Director of Procurement Services, dies

John H. Heck, Director of Procurement Services, died April 24 at Fairfax Hospital after a heart attack.

Mr. Heck joined COMSAT in 1964 as Procurement Manager in the Office of the Finance Coordinator.

Earlier he had been Manager of Contract Administration for the Hoffman Electronics Corporation in Los Angeles and Director of Contracts and Product Manger in the Energy Division of Olin Mathieson Chemical Corporation in New York and California.

Mr. Heck was born in Philadelphia and graduated from Pennsylvania State University in 1941. He earned a master's degree in business administration from George Washington University in 1951 and a law degree there in 1954.

He served in the Navy from 1943 to 1950, seeing duty in the Pacific in World War II. He was a contract negotiator with the Navy Department's Bureau of Ships from 1951 to 1953.

He is survived by three sons, Thomas M. and Brian C., of Vienna, and John H. Jr., of Rockville, and a sister, Vivian Richter of Newtown Square, Pa.

NEW HEADQUARTERS

(Continued from page 9)

atria. Pools of water will be used both outside the building and inside the atria to cool summer air and to maintain a sense of repose and beauty.

The building will be surrounded by parks which will retain almost all of the best trees currently on the site. These trees will serve as natural air conditioners, cooling summer air before it enters the building. The terraced roof areas of the building will also be landscaped gardens.

The exterior of the building will present a delicate facade of stainless steel and acrylic sun screens in front of floor-to-ceiling glass walls. The atria and sun screens together will admit a maximum of natural daylight, while excluding unwanted direct sun rays.

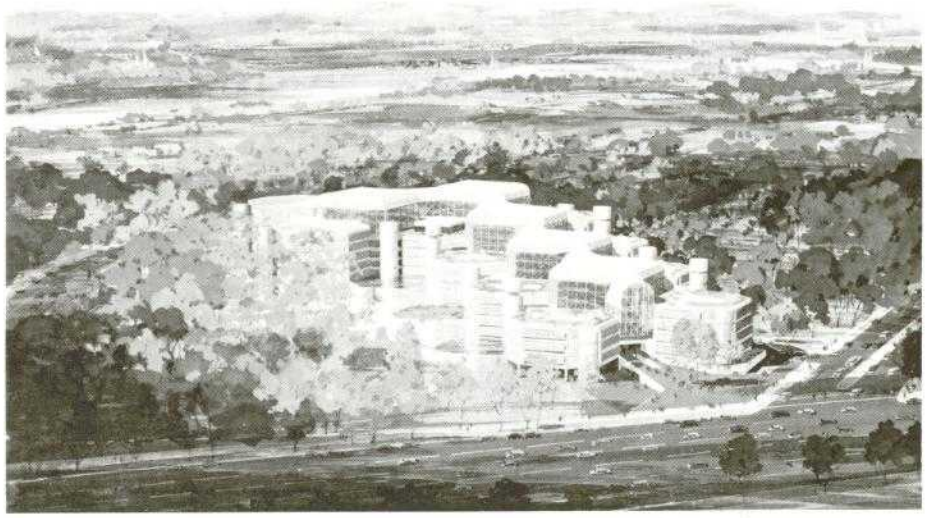
The creative use of atria, sun screens, pools and trees are among many innovations which will enable the building to achieve a high degree of energy efficiency. Some 60 percent of the energy required for the building will be natural "free energy" captured from the environment.

While a typical office building in Wahington requires a "utility-supplied" energy budget of 65,000 Btu's per square foot per year, the INTELSAT building will, by comparison, require only 24,500 Btu's. The remainder will be furnished by nature, through architectural design.

The building will be well served by Metro.

INTELSAT hopes to begin construction as soon as the various approvals can be obtained. It is hoped that the building will be completed by 1983. Overall cost of the building and landscaping is expected to be about $30-million.

In the event that this site does not become available, it is expected that the architect, John Andrews, will be retained to design INTELSAT's new building elsewhere.



Proposed INTELSAT headquarters, as rendered by an artist

First Quarter results

COMSAT has reported consolidated Net Income of $9,889,000, or $1.24 per share, for the first quarter of 1980, a decrease of $2,013,000 or 25 cents per share (16.9 percent) from the first quarter a year ago.

The decrease was caused primarily by planned increases in start-up costs of Satellite Business Systems (SBS), a decline in revenues from service to the U.S. Navy through the MARISAT system, and costs associated with the development of new businesses including COMSAT General TeleSystems, Inc.

The COMSAT Board of Directors declared a quarterly dividend at the previous rate of 57.5 cents per share, payable June 9 to shareholders of record on May 9.

Consolidated Net Income for the first quarter of 1980 increased by $2,351,000, or 30 cents per share, from $7,538,000, or 94 cents per share, for the fourth quarter of 1979. Approximately half of the increase is attributable to the non-recurrence of certain charges against income taken in the fourth quarter of 1979, including a charge resulting from currency restrictions associated with the Corporation's investment in a Nicaraguan corporation (NICATELSAT).

Operating Revenues for the first quarter of 1980 totaled $70,030,000, an increase of $10,039,000 from the first quarter of 1979. Operating Expenses for the first three months of 1980, including income taxes, were $59,533,000, up $11,008,000 from the first quarter of 1979.

Because the Corporation acquired Environmental Research & Technology, Inc., of Concord, Massachusetts (ERT) in May 1979, results for the first quarter of 1979 do not reflect the operations of ERT.

The Corporation's share of losses and amortization of certain costs relating to SBS is included in Other Income (Expense)—Net. The SBS-related expenses reduced Net Income for the first quarter of 1980 by $2,428,000. The reduction attributable to SBS for the first quarter of 1979 was $996,000.

Operating Revenues for the first quarter of 1980 were up $563,000 from the fourth quarter of 1979, Operating Expenses were down $996,000, Net Operating Income was up $1,559,000, and net expense under "Other Income (Expense)—Net" was down from $1,400,000 to $608,000.

looking at ERT

Four staff members continue work on particles in the air

EDITED BY DALLAS GALE

ERT, whose scientists have been involved in nearly every major aerosol (airborne particles) characterization study in the United States, continues to take a leadership role in the development of models to better understand and describe polluting particles in the air.

In February, four ERT scientists, working under contract to the U.S. Environmental Protection Agency, conducted a review and analysis of receptor models for preparation of a guideline report. Drs. John Watson and Terry Peterson of Concord, Massachusetts, and Drs. Ron Henry and George Hidy of Westlake, California, brought together 47 aerosol experts from U.S. industry, universities, and government agencies to help them in the evaluation. Their purpose was to review the use of receptor models in assessing sources of airborne particles and to formulate plans for better modeling techniques through combined use of source and receptor models.

Particles in the air come not only from stationary sources which can be monitored, but from numerous sources less easily controlled. Approximately half of the measurable particles in a sample of urban air come from the transformation of gases into particles in the air and background dust from many small sources such as road dust, auto exhaust dust, and home heating exhaust.

Using a source model, scientists consider the emission rates of the particles and the weather conditions which will effect their dispersion, and predict their probable down-wind distribution. In applying the receptor model, particles in the air are monitored both at known sources and at sampling or receptor sites. By studying the physical and chemical properties of the particles and the way their concentrations vary over time, and by comparing these with characteristics of particles from a known source, scientists can predict ratios of other pollutants from that source and predict their contribution to the ambient concentration.

For example larger particles in a sample (approximately 10 μm in diameter) are the result of physical breakdown, grinding, or erosion; smaller particles (about 0.5 μm in diameter) most often are the product of combustion. Further analysis of the larger particles might reveal the presence of aluminum and silicon in a particular ratio indicative of clay, or in another ratio found in granite. Measurement of the particles over time might reveal peak concentrations which coincide with rush-hour traffic. Suspecting road dust, the scientist will return to his data from the most probable sources. Through comparison he will identify the type of source and in some cases the specific source.

Use of receptor models is important to states submitting State Implementation Plans (SIPs). These plans are required under the 1977 Amendments to the Clean Air Act if states do not meet the National Ambient Air Quality Standards. The receptor model permits more specific identi-

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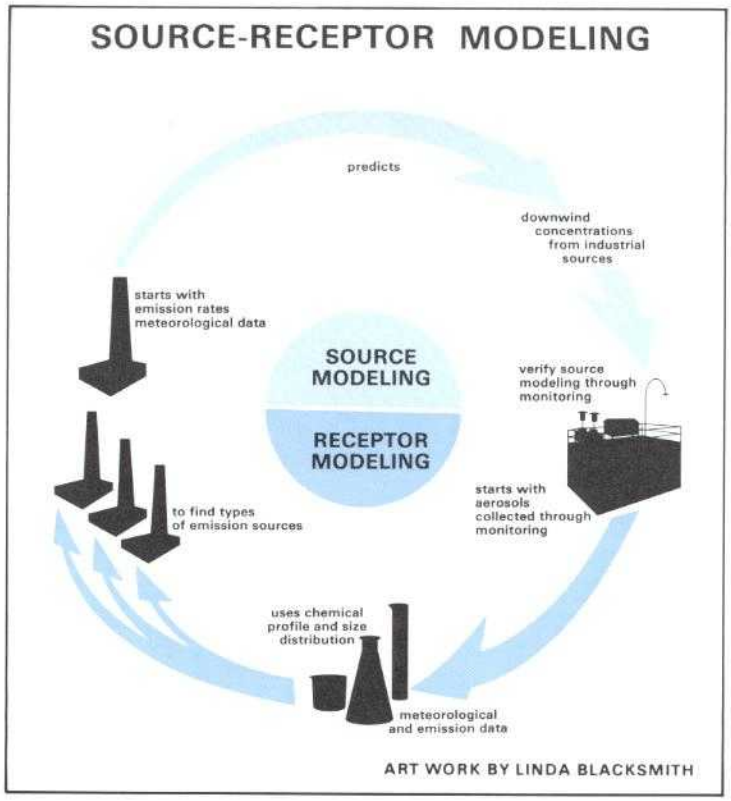
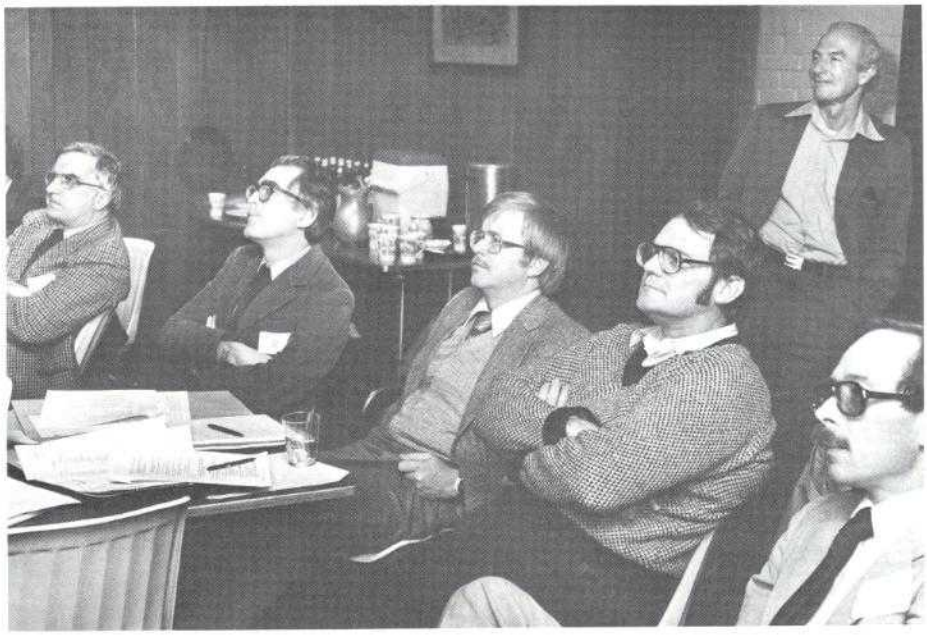


Ms. Gale is Staff Assistant for Communications to Dr. Norman Gaut, ERT President.

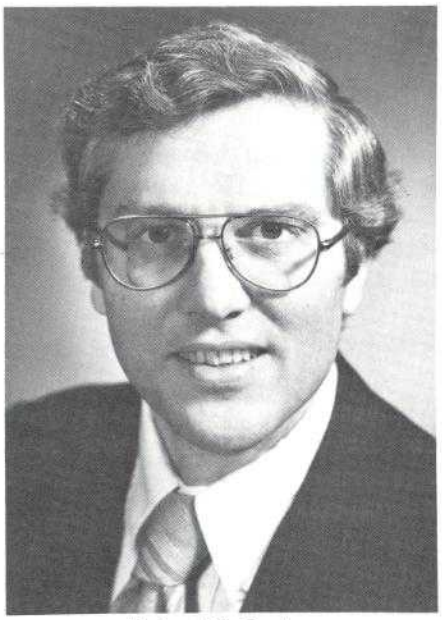
(Continued from page 11)

fication of sources and thereby allows the state to more closely control pollution sources.

As a result of this evaluation and analysis, steps are being taken to verify models now in use, to develop prototype applications, to further characterize sources and improve sample analysis, and to develop a reliable hybrid from present source and receptor models which will simplify the source identification task.



Scientists from a variety of organizations participated in the Receptor Model Workshop organized by ERT. From left: John Overton of The Research Corporation; Dr. Charles Lewis of the Environmental Protection Agency's Environmental Science Research Laboratory; Richard Lee of U.S. Steel; Dr. George Hidy, Head of Western Operations for the ERT Environmental Chemistry Center; Dr. Sheldon Friedlander (standing), Chairman of the Department of Chemical Engineering, UCLA; and Dr. Jarvis Moyers, Department of Chemistry, University of Arizona.



Robert W. Dunlap

PHOTO BY DON HARPER

Dunlap succeeds Harlan in position of EVP

ROBERT W. DUNLAP has been appointed Executive Vice President of ERT. Formerly Vice President of this COMSAT subsidiary and Director of its Environmental Engineering Group, Dr. Dunlap was recommended to the ERT Board of Directors by President Norman E. Gaut. In this position, Dr. Dunlap succeeds Mr. Robert B. Harlan, Jr., who will remain with the Company on a part-time basis. Dr. Leigh Short of ERT (Houston) will assume the Directorship of the Environmental Engineering Group.

As Executive Vice President, Dr. Dunlap will oversee the operations of the business groups within ERT which produce the Company's revenue—Marketing, International, Environmental Studies, Information Systems, and Environmental Engineering.

Before joining ERT in 1977, Dr. Dunlap was Director of the Environmental Studies Institute and Co-Chairman of the Department of Engineering and Public Policy at Carnegie-Mellon University. For ERT, he has directed the processing/engineering activities and consulted extensively with coal, gas, and steel industries in environmental engineering studies. He is currently a member of the Environmental Protection Agency's National Air Pollution Control Techniques Advisory Committee which oversees the setting of New Source Performance Standards.

Computer system to be moved to Saudi Arabia

ERT is developing communications and scientific software for a computerized data center in the Kingdom of Saudi Arabia under a $1.6 million contract awarded last fall. The computer system, presently housed at ERT Corporate Headquarters, Concord, Massachusetts, will be moved to Saudi Arabia's interim National Meteorological Center in Jeddah and is expected to be in operation by May 1981. Since 1975, ERT has been a general advisor to the Saudi General Directorate of Meteorology and has performed many services for them, ranging from environmental monitoring and measurements to development of environmental standards and organizational plans to permit the Directorate to take on the responsibilities for environmental protection.

Anne Speare, left, former CEA President, leads her last Board meeting.

PHOTOS BY MICHAEL K. GLASBY

CEA Board elects new slate of officers

The Board of the COMSAT Employees Association (CEA) has elected its officers for 1980. They are Gus S. Souris Jr., President; Claudette Tucker, Vice President; Patricia Sample, Secretary; and Hugh Hutchens, Treasurer.

In all, the CEA Board is composed of nine Directors, each elected for a two-year term. Two representatives—one from Monitoring and Control Engineering and one from TeleSystems—also participate in Board meetings. In addition to the officers, the 1980 CEA Board members and representatives are:

Pat Carlton, Bulletins Chairman; Allan Cramer, Social Chairman; Jean DeVera, Clubs Chairman, and Athletics Co-Chairman; John Maddox, Athletics Chairman and Membership Co-Chairman; Jo Moyer (TeleSystems representative), Dis-

(Continued on next page)

Gus S. Souris Jr.
President

Claudette Tucker
Vice President

Patricia Sample
Secretary

Hugh Hutchens
Treasurer

John Maddox
Athletics, Membership

Pat Carlton
Bulletins

Jo Moyer
Discounts, Sales & Travel

Allan Cramer
Social

CEA OFFICERS

(Continued from page 13)

count, Sales and Travel Co-Chairman; Patricia Richards (MCE representative), Membership Chairman; and Eli Wachsberg, Discounts, Sales and Travel Chairman.

Retiring from the CEA Board this year were 1979 officers Anne Speare, President, and Ernst Steinbrecher, Vice President, as well as Ann Younger, Bulletins Chairman and Social Co-Chairman, and Gene Barrett, Athletic Chairman and Social Co-Chairman.

The CEA recently conducted a T-shirt contest. In all 37 employees submitted designs. Winner was William R. Schaefer, whose design combines the COMSAT logo and the initials CEA. T-shirts bearing the Schaefer design should be available by the annual picnic (Sunday, June 1) and can be purchased for $3.50 each.

The design judged to be second best was submitted by George F. Laird, and the designs of Orlando Wilson and Jim Goodman tied for third-best in the voting conducted by the CEA Board.

Winner of the CEA T-shirt contest, Bill Schaefer, left, receives his prize from Claudette Tucker, CEA Vice President. Second-place winner was George Laird, center. Schaefer, Laird and Tucker all work at COMSAT Labs. PHOTO BY CARROLL HAUGH

Eli Wachsberg
Discounts, Sales & Travel

Pat Richards
Membership

Jean DeVera
Athletics

Representatives from 76 member nations attend COMSAT-sponsored Meeting, which coincides with 15th anniversary of Early Bird launch

9th Annual INTELSAT Meeting of Signatories

9th Annual INTELSAT Meeting of Signatories

By James T. McKenna

By all accounts, the 9th Meeting of INTELSAT Signatories, which was hosted by COMSAT, was a big success, and the event had a special significance as it coincided with the 15th anniversary of the launch of Early Bird, INTELSAT's first commercial communications satellite.

In all, representatives from 76 of the 102 INTELSAT member nations—many accompanied by their families—came to the Contemporary Resort Hotel in Walt Disney World in Orlando, Florida, March 31 to April 3. They came to fulfill the mandate of the Meeting of Signatories to establish each year the minimum investment share that entitles a Signatory or group of Signatories to a seat on the INTELSAT Board of Governors.

The Meeting set the minimum investment share for a seat on the Board at 1.88 percent, which is equivalent to the investment share of the INTELSAT system's 13th largest shareholder, the United Arab Emirates.

Other business conducted during the week included reviewing operational and financial matters relating to INTELSAT activities. The Meeting also approved requests by the Signatories of Australia and Colombia that certain of their domestic traffic be treated on the same basis as international traffic.

The 9th Meeting of INTELSAT Signatories was the second Signatories gathering to be hosted by COMSAT. The Corporation also sponsored the first Meeting of Signatories. The Meeting of Signatories is one of the four elements in the structure of INTELSAT (the International Telecommunications Satellite Organization), which also consists of the Assembly of Parties, the Board of Governors and the Executive Organ. Made up of representatives of the operating entities of INTELSAT, the Meeting of Signatories considers matters called to its attention by other bodies of INTELSAT as well as matters relating to financial, technical and operational aspects of the system.

The keynote speaker was David Newsom, Under Secretary of State for Political Affairs, who brought the greetings of President Jimmy Carter to the delegates.

See full color photo coverage of the Meeting on pages 16 and 17.

In the statement read to the delegates by Under Secretary Newsom, President Carter noted the importance of INTELSAT in fostering understanding among nations. "The success of INTELSAT is evidence of the positive and practical achievements that can flow from international cooperation. I wish you every success in your effort . . . to improve international telecommunications and goodwill."

As host, COMSAT President and Chief Executive Officer Joseph V. Charyk welcomed the group to the United States and was elected Chairman for the Meeting. Dr. Charyk

(Continued on page 18)

Mr. McKenna is Manager, Marketing Support Services, Office of Public Affairs.

9th Annual INTELSAT Meeting of

Signatories - Orlando, Florida - April 1980

SIGNATORIES

(Continued from page 15)

cited the phenomenal growth of the INTELSAT organization in its 16 year existence. "In 1964, eleven nations were represented in INTELSAT. Today, at this Meeting of Signatories, we have 160 delegates representing 76 of the 102 Signatories. We will be discussing technical and financial issues associated with a system that has grown from one operational satellite and one satellite path to 12 satellites, 274 antennas and about 800 satellite paths. We have witnessed an increase in revenues from $5.6 million in 1965 to $195 million in 1979, and a decrease in utilization charges from $32,000 per unit each year to $5,000 per unit each year." In concluding his remarks to the delegates, Dr. Charyk said, "COMSAT has been proud to participate in INTELSAT's evolution. We are looking forward to the future, confident that through partnership and international cooperation, INTELSAT will continue to provide the world's people with high quality, low-cost communications, and thereby contribute to world peace and understanding."

Since the Meeting coincided with Easter and Passover holidays, many of the 130 representatives and alternates brought their families with them to enjoy the many social and entertaining events of the Walt Disney World area.

The arrangements for the meeting were under the direction of COMSAT's Howard Briley who had a well-organized COMSAT support staff which coordinated and arranged for every requirement needed to make the Meeting an operational and social success. Planning for the event began two years ago.

COMSAT hostesses met all delegates and their families at the Orlando airport and assisted them with their luggage and ground transportation to the Contemporary Resort Hotel. Many of the arrivals occurred in the wee hours of the morning, and the appreciation of the arriving delegations was often expressed to COMSAT management officials.

Water Skiers at Cypress Gardens welcome COMSAT and INTELSAT guests.

The second floor of the Contemporary Resort Hotel was the center of activity for the meeting. Here registration took place, at which welcoming packages were presented to delegates and their families. Here too were located printing facilities for the event, an international communications center and the meeting room itself where simultaneous translation was provided by INTELSAT translators.

A number of social events were hosted by COMSAT during the four-day meeting. While the meeting was in session, spouses and family members were busy visiting places like Cypress Gardens, Lake Buena Vista and trips to Walt Disney's Magic Kingdom.

On Monday evening, COMSAT hosted a boat ride around the Lake Buena Vista area, which featured hors d'oeuvres, refreshments and entertainment provided by the Disney organization.

The Meeting, as previously noted, also coincided with the 15th anniversary of the launch of Early Bird, INTELSAT's first commercial communications satellite, and on Wednesday, 270 delegates, the support staff and their families visited the Kennedy Space Center where the Early Bird satellite was launched. NASA Administrator Robert Frosch welcomed the delegates to the Space Center.

Following Mr. Frosch's greetings, the group saw the Space Shuttle complex, including the launch pad and landing strip.

On Wednesday evening, COMSAT hosted a dinner and a floor show at the Contemporary Resort Hotel. A separate party for the children was held which featured Disney World characters and Disney films. Each child received favors relating to Walt Disney programs and projects, and the adults were presented with Lucite mementos of the Early Bird satellite.

Following the Meeting of Signatories, there was an extraordinary meeting of INTELSAT's Assembly of Parties. The Meeting was convened to consider the technical and economic impact on the INTELSAT system of the proposed ARABSAT regional system. In accordance with the advice of the INTELSAT Board of Governors, the Assembly decided that the ARABSAT system is technically compatible with the INTELSAT space segment and will not cause significant economic harm to the INTELSAT system.

The week's activities can be seen and understood from the photographs on pages 16 and 17. They were taken by COMSAT's Public Affairs photographer William Megna.

Headquarters architect named, some charges reduced and INMARSAT offer approved

By Betsy Kulick

The Forty-First Meeting of the Intelsat Board of Governors was held from March 6 to 13, 1980, at Intelsat Headquarters. Twenty-five Governors representing sixty-eight Signatories attended the meeting; the highlights were as follows:

Intelsat's plans for a new Headquarters came closer to finalization with the Board's selection of John Andrews International Pty. Ltd. of Australia as the building architect, and authorization for the hiring of a Headquarters Project Manager and Secretary. Legislation is currently pending in Congress to enable Intelsat to lease a site within the International Center complex on Connecticut Avenue between Tilden and Van Ness Streets. (See related story on page 9.)

Technical and Operational Matters

Among its significant actions at this Meeting, the Board reduced the charges for long-term allotment of spare space segment capacity to $800,000 per year for a global transponder. Signatories leasing such capacity to meet their domestic communications needs will be able to take advantage of the new rates with the understanding that when, in the future, leased capacity is provided on a planned basis, either the charge will be revised to reflect the new service or the agreements involved will be terminated.

On the basis of these new terms, the Board approved a new allotment agreement with Brazil for two halves of one hemispheric beam transponder, and renewed for five years a lease of one global beam transponder to Algeria. A request from Thailand for a similar lease of three-quarters of a hemispheric beam transponder was approved in principle.

Inmarsat on March 13 (the last day of the Board meeting) issued an RFP for maritime space segment services. In order to enable timely Intelsat action the Board authorized the Director General to respond to the RFP and to begin negotiations to develop a draft contract for such services, subject to future Board approval.

In response to notification by Mexico of an increase in its requirements for television services, the Board amended its previous decision and authorized the Director General to conclude an agreement directly with Western Union Telegraph Co. for the lease of one full transponder to carry television services between Mexico and the U.S., with the possibility of simultaneous downlinks to Mexico.

In further development of the Intelsat V program, the Board authorized fabrication of nickel hydrogen batteries for the Intelsat V (F-5), (F-6) and (F-7); at the time of Intelsat V (F-5) spacecraft integration a decision will be made on substituting these batteries for the existing nickel cadmium batteries.

Information received from NASA just prior to the Meeting indicated that Atlas Centaur launch vehicles can be made available to Intelsat after 1982; additional information on the availability of Ariane launch vehicles in that period was also received from ESA. The Board noted this information and requested the Director General to provide for its future consideration an analysis of the number of Atlas Centaur and Ariane launch vehicles which may be required.

With respect to intersystem coordination, the Board advised the Assembly of Parties that the proposed Arabsat System and its operation are technically compatible with the Intelsat system, and will not, based on the existence in 1983 of an integrated terrestrial network, cause significant economic harm to the global system of Intelsat. The Board also determined that the U.S. Westar III network is technically compatible with the Intelsat space segment.

In discussions concerning the provision of international and domestic services, the Board requested the Director General to reassess the date at which high capacity Intelsat VI spacecraft would be available, and to develop contingency plans for extension of the Intelsat V configurations in the Atlantic and Indian Ocean Regions beyond 1985 and 1986 respectively, in the event of delay in availability of the VI. The Director General will present refined spacecraft concepts, including analyses of launch vehicle and financial considerations, to future Board meetings. The Board also decided not to issue an RFP for a design competition for a Delta-class Hybrid satellite for both domestic and international services. The Director General was asked instead to evaluate capacity beyond 1982 to meet planned domestic lease service requirements; if sufficient capacity is not expected to be available on operational satellites providing international service, additional satellites (including a Delta-

(Continued on next page)

Ms. Kulick is Analyst, Representation Support, INTELSAT Affairs Division.

INTELSAT REPORT
(Continued from page 19)

class satellite dedicated to domestic service) may be considered.

In action concerning non-standard earth stations, the Board granted an extension through August 4, 1980, of access free of charge for the U.S. automatic seismic installation terminal in Alaska to conduct experiments.

In 1979, the Board had determined that the rate adjustment factor would be waived for non-standard stations being retrofitted for dual polarization operation with INTELSAT V satellites. At this meeting, the Board approved access on this basis for specified periods of time by non-standard stations in Trou Biran (French Guiana); Trois Ilets (Martinique); Pinugay (Philippines); Hong Kong; and Zamengoe (Cameroon). The Board also approved non-standard stations in Brazil and Norway, and granted formal approval to stations in Algeria, Denmark and France, for domestic services with leased capacity.

Financial and legal matters

The new investment shares were recalculated on March 1, 1980 and took effect from March 31, 1980. The new COMSAT share is 22.596421 percent.

In addition, the Board approved the loan of an INTELSAT-owned Low Noise Amplifier to COMSAT, and loan of a Magnetic Bearing Momentum Wheel to the German Research and Development Institute for Air and Space Activities.

Delbert D. Smith will be new Senior Vice President, Corporate Affairs

Delbert D. Smith has been elected Senior Vice Preident, Corporate Affairs, effective July 7, responsible for Congressional and Government Relations, Public Affairs, and Community Relations.

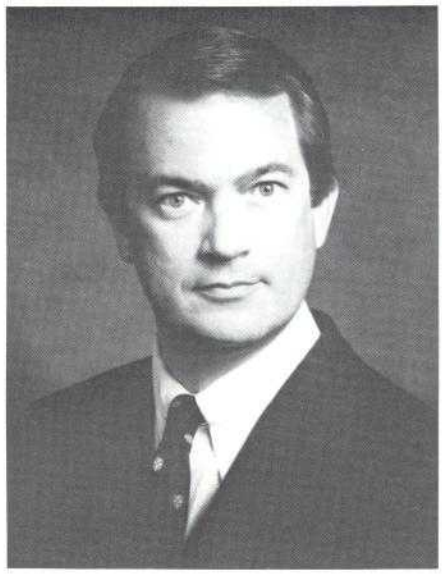
In announcing the election President and Chief Executive Officer Joseph V. Charyk said, "Dr. Smith's broad expertise in satellite communications will further strengthen our continuing corporate efforts to bring the many benefits of satellite communications to the public."

Lucius D. Battle, who has been COMSAT Senior Vice President, Corporate Affairs, since December 1974 will assume a new position in July as Chairman of The Johns Hopkins Foreign Policy Institute, which is part of the School of International Studies of The Johns Hopkins University. Mr. Battle has been associated with COMSAT since 1968, except from June 1973 to December 1974 when he served as President of the Middle East Institute.

Since 1971 Dr. Smith has practiced law in Madison, Wisconsin, specializing in domestic and international satellite communications law. He has written extensively on satellite communications and has been editor of *Satellite Communications* magazine.

Dr. Smith received a Ph.D. in International Law from Cambridge University in 1968, a J.D. from The University of Wisconsin in 1969, and the Diploma in Public International Law from The Hague Academy of International Law, The Hague, The Netherlands in 1969.

He is the author of numerous articles and books. His books include *International Telecommunications Control; Communications Via Satellite: A Vision in Retrospect; Teleservices Via Satellite;* and *Space Stations: International Law and Policy.*



Dr. Smith is a native of Milwaukee. He and his wife, the former Mary Margaret Jackson, also of Milwaukee, currently reside in Madison with their four children.

Fessenden Award won by Charles Dorian

Charles Dorian, Captain, USCG Ret., and presently Director, Technical Planning, MARISAT Systems Management Division, COMSAT GENERAL, has been designated as the second recipient of the Reginald A. Fessenden Award presented by the National Marine Electronics Association to "honor outstanding living individuals who have improved the public good through marine electronics." The first recipient of the award was Jack Cain of Lorain Electronics in 1979.

Fessenden, for whom the award is named, held more American patents

(Continued on page 26)

How does your job rate?

A look at the COMSAT Job Evaluation Committee System

"THE EVALUATION OF JOBS is to be done in an unbiased manner establishing evaluations which are both uniform throughout the Corporation and produce a logical step progression within the various divisions."

This statement of policy by the Office of Personnel tells us the objective of the job evaluation activity at COMSAT, but it does not tell us how that activity is to be carried out. Job evaluation is a committee activity at COMSAT, specifically an activity involving two separate groups of people drawn from operating units from throughout the Corporation.

One committee—the Non Management Committee—looks at all jobs below manager level. The other—the Management Committee—looks at jobs at the manager and director levels. In addition, the Management Committee has the job of reviewing some of the evaluations of the Non Management Committee to make certain that the "logical step progression within the various divisions"—to refer to the policy statement again—does exist.

From the work of the committees, a numerical evaluation for each job is determined. The numerical evaluations, derived from first determining numerical values for three key criteria of a job—know-how, problem-solving and accountability—are then used by the Office of Personnel in another mathematical routine to determine the salary ranges of jobs.

The performance of evaluations in an unbiased manner and the assurance of a logical step progression within the various divisions are the number one objectives of the COMSAT Job Evaluation System, but there are several others:

- Every job is evaluated, including the position of President and Chief Executive Officer (officer positions are evaluated by the Corporation's consultants, Hay Associates);
- The Job Evaluation System is to be applied to jobs, not people. In fact, members of the Job Evaluation Committees do not have employee names when evaluating jobs;
- Committee members are to take into account job content only—the substance of a job—not title;
- The responsibilities of committees are arranged so that committee members are only involved in looking at jobs below their own evaluation level;
- Each committee member contributes a knowledge of his own unit and its job structure in the deliberations of the committee, but each has the primary responsibility of fostering the overall goals of the Corporation;
- The evaluation given each job is confidential. Only Job Evaluation Committee members involved in the evaluation and senior members of the Office of Personnel are permitted to know the Evaluation Points of any individual position;
- Committee members do not know the salary ranges that result from their evaluation activities. Salary ranges are compiled from the

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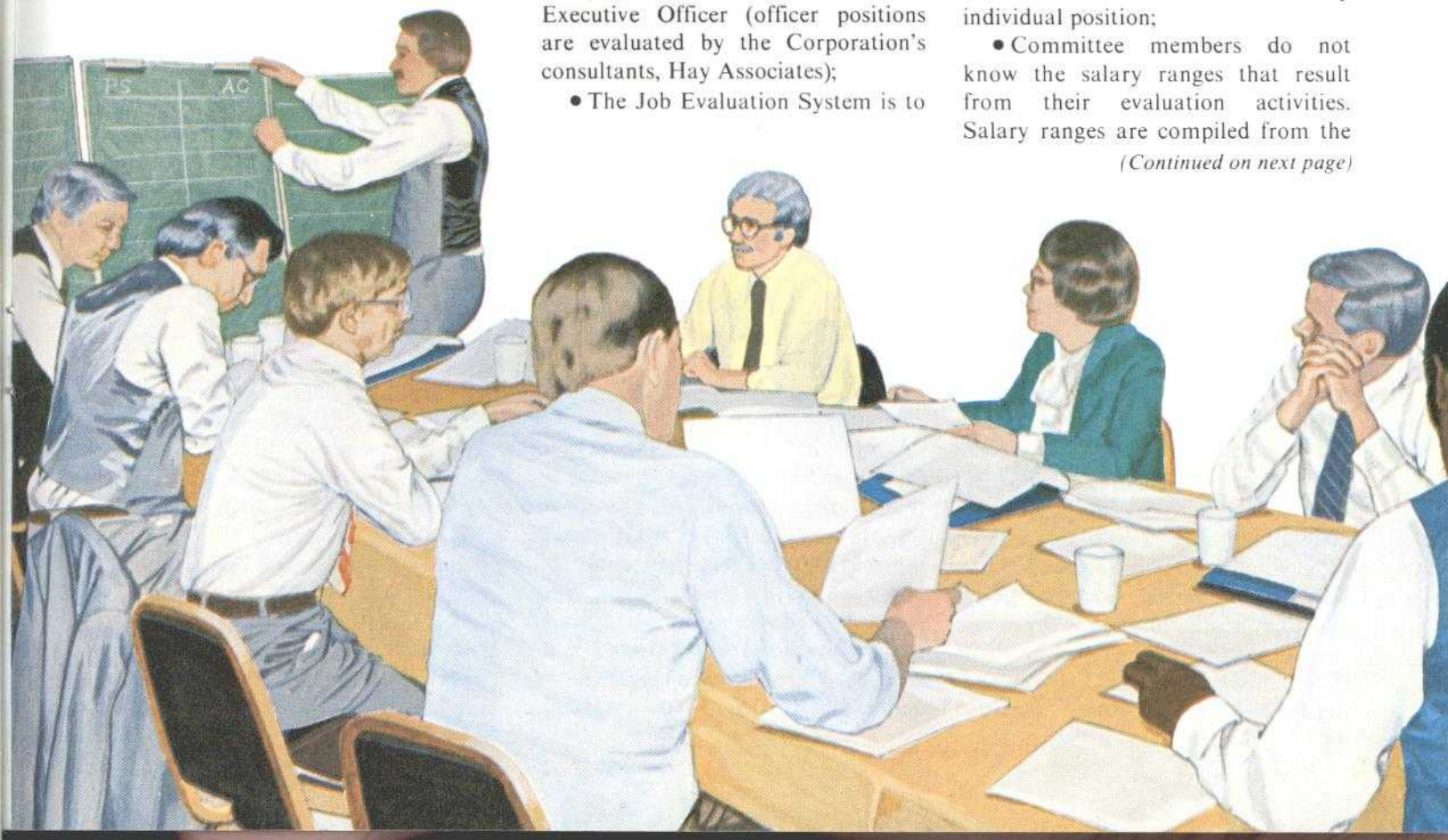
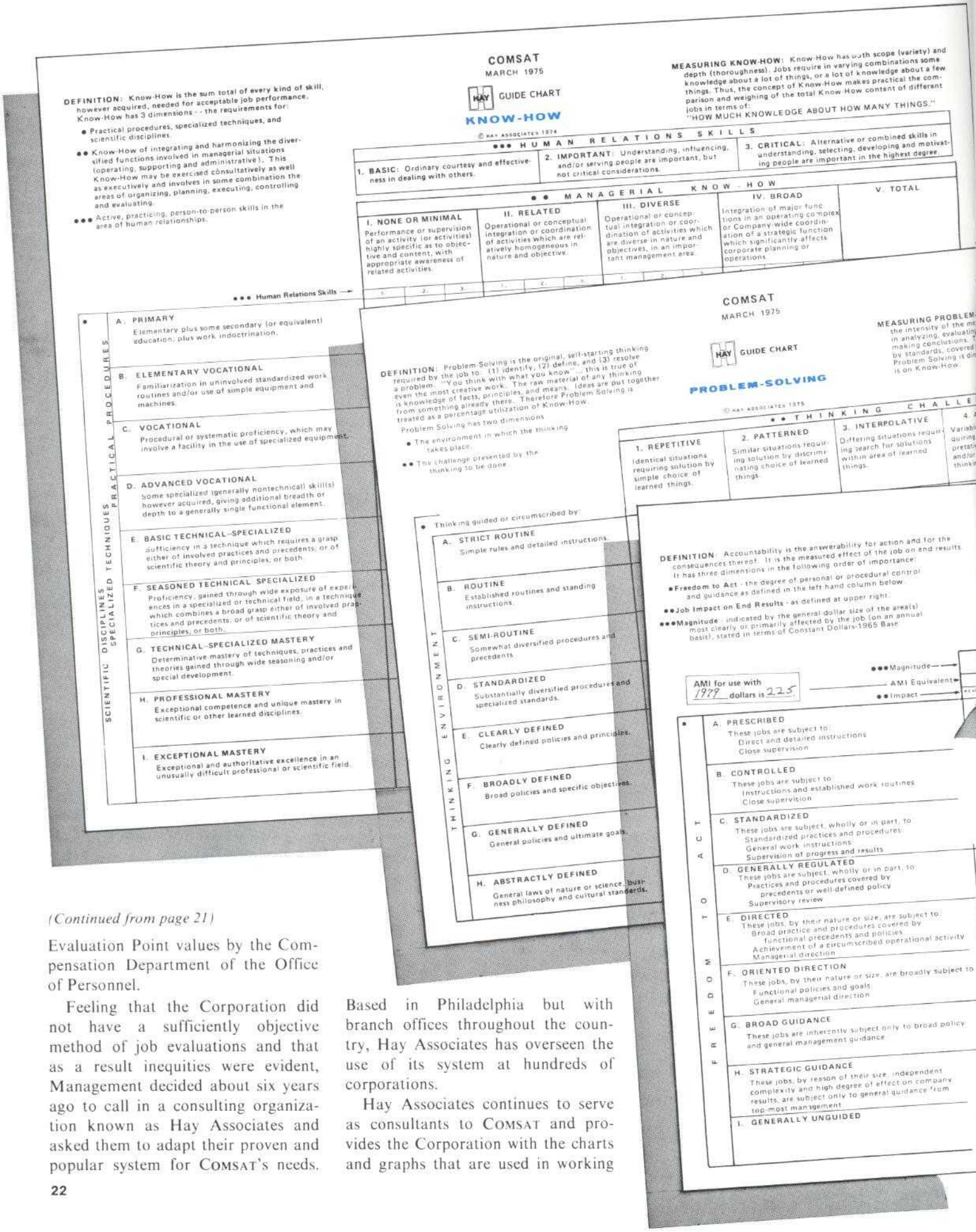




(Continued from page 21)

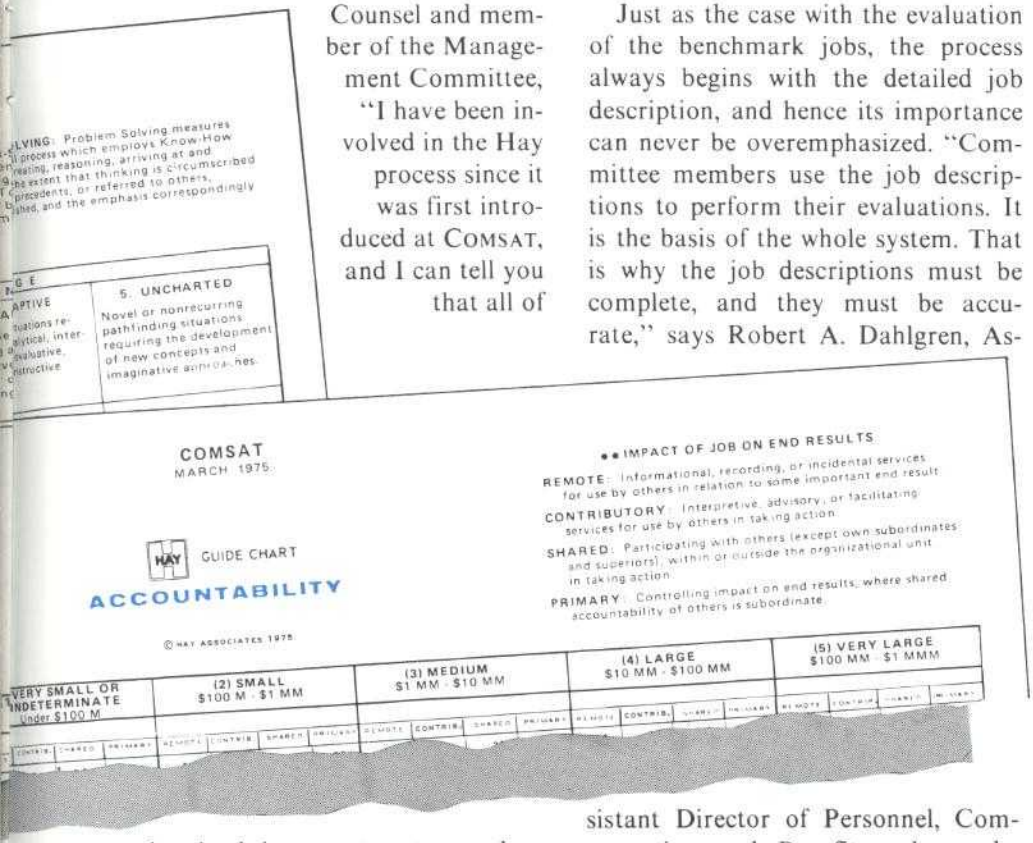
Evaluation Point values by the Compensation Department of the Office of Personnel.

Feeling that the Corporation did not have a sufficiently objective method of job evaluations and that as a result inequities were evident, Management decided about six years ago to call in a consulting organization known as Hay Associates and asked them to adapt their proven and popular system for COMSAT's needs. Based in Philadelphia but with branch offices throughout the country, Hay Associates has overseen the use of its system at hundreds of corporations.

Hay Associates continues to serve as consultants to COMSAT and provides the Corporation with the charts and graphs that are used in working

out numerical evaluations and salary ranges.

No one—not Committee members, not members of the Office of Personnel—could foresee just how much effort would be entailed in putting COMSAT's version of the system into effect. Says Milton Nomkin, Associate General Counsel and member of the Management Committee, "I have been involved in the Hay process since it was first introduced at COMSAT, and I can tell you that all of us involved have put a tremendous amount of time and effort into making it work."



The process of using the COMSAT Job Evaluation System began with identification of existing jobs taken from throughout the Corporation as benchmarks and then evaluating these jobs. First, detailed job descriptions were written for each of the benchmark jobs. Then the two Job Evaluation Committees went into session and with the help of a consultant from Hay Associates began thrashing out numerical evaluations for the jobs using the charts provided by the Hay organization. Once the numerical values were worked out for the benchmark jobs—by no means an easy undertaking—the process of evaluating all other jobs in the Corporation was initiated.

Today, the work of the committees is taken up with the evaluation of new positions and of jobs, which, while their titles may have remained unchanged, have changed in terms of content—have changed, that is, in terms of the three key criteria of know-how, problem solving and accountability.

Just as the case with the evaluation of the benchmark jobs, the process always begins with the detailed job description, and hence its importance can never be overemphasized. "Committee members use the job descriptions to perform their evaluations. It is the basis of the whole system. That is why the job descriptions must be complete, and they must be accurate," says Robert A. Dahlgren, Assistant Director of Personnel, Compensation and Benefits, who under the direction of Roy Greene, Director of Personnel, and David S. Nye, Assistant Vice President, runs the COMSAT Job Evaluation System.

What is the advantage of having a committee of people evaluating jobs? Why wouldn't it be better if one person or just a few senior staff people of the Office of Personnel did it? Joseph L. Mahran, Assistant Vice President, Financial Administration, for COMSAT General, and another member of the Management Committee, answers these questions this way:

"The whole process insures employees of comparative equity. Through the give and take that takes place in committee sessions, I think we succeed in keeping biases out of the system. An engineer tends to look at a job in one way. A lawyer tends to look at it in another way and a financial person in still another. Through the interaction that takes place when we meet as a committee, we achieve a consensus that is essentially fair." [By publication time, Joseph L. Mahran will have left COMSAT General for a new position. See the article on page 26.]

Mahran adds, "I really think that through the approach we achieve a much better result than would be possible if just one person were doing our evaluations. I think that's true even though an outsider might argue that it would be more efficient and consistent if just one person handled the job."

The basic tools of the Job Evaluation Committees are, as already indicated, the detailed job description and the evaluation charts. In addition, committee members are given two separate sets of computer printouts containing evaluations on already-evaluated jobs. In one printout, all the evaluations are listed in descending order, based on Job Evaluation Points. In another, they are grouped on the basis of divisions, groups, lines of business, etc. Both are invaluable tools when committee members seek to see how their evaluations of newly considered positions compare with the existing evaluation structure.

Let's look more closely at the job evaluation charts, parts of which are reproduced to the left. In using each chart, committee members make certain decisions about a job along the horizontal axis and along the vertical axis, then find where the two axes intersect on the numerical area of the chart (not reproduced). Once they have the numerical value, they then move on to the next chart. The charts are used in this order: 1) Know-how, 2) Problem-solving, and 3) Accountability.

Know-how is defined as "the sum total of every kind of skill, however acquired, needed for acceptable job performance." Problem-solving is defined as "the original, self-starting

(Continued on next page)

(Continued from page 23)

thinking required by the job to: 1) identify, 2) define, and 3) resolve a problem. 'You think with what you know.'" Accountability is defined as "the answerability for action and for the consequences thereof. It is the measured effect of the job on end results."

For a fuller idea of what is being measured on each chart and how it is being measured, study the border areas on each chart, as they are reproduced on pages 22 and 23.

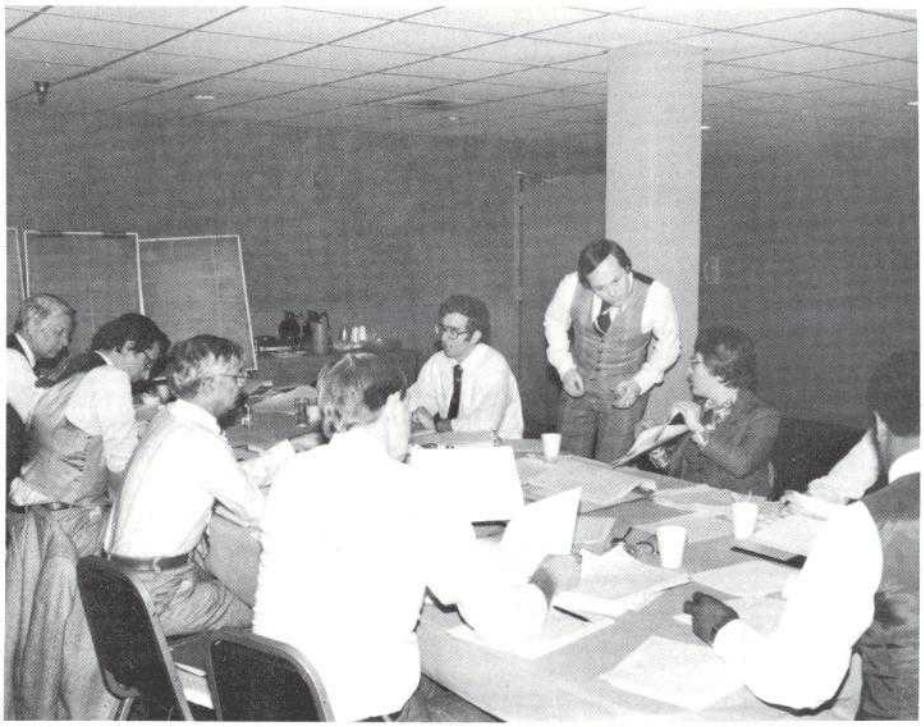
It's important to remember that when meeting as a committee, members discuss each step of the evaluation process and do not go on to the next step until after a vote has been taken and a consensus has been achieved. (If a consensus cannot be reached, a member of management with knowledge of the specific job under discussion may be asked to come to the next committee meeting to clarify whatever is confusing about the job.)

As a result of using the charts, committee members come up with three numbers for each job. The three, which are revealing in their own right and are known as the job profile, are then added together to provide the total Job Evaluation Points.

One fact that cannot be emphasized enough is that while the process may sound mathematical, it is actually made up of a series of judgments that are not inherently mathematical in nature. These judgments are only so good as the individual and collective wisdom of the committee members themselves. That is really the engine that drives the system.

James B. Potts, Division Director and Chief Engineer, Systems Technology Services, and a member of the Management Committee, puts it this way, "In my view, the breadth and depth of experience of the committee members and their familiarity with Corporate pursuits and responsibilities are the essential ingredients in making the system work." And Joseph L. Mahran makes this comment, "This is not really a statistical exercise. A committee member is making judgments based on his knowledge of the specific job in question, the job structure, and where he thinks the Corporation is today and where it is heading."

When you talk to members of both Job Evaluation Committees, you find a lot of enthusiasm for the system, as



Members of the Non Management Committee at work: from left, George J. Tellman Jr. (alternate), Brian J. Williams, Hasin A. Hashmi, Walter S. McKee Jr. (back to camera), Jeffrey L. Rubin, Steven J. Parker (Office of Personnel adviser), M. Carol Smith, John J. Lehan Jr. (obscured), and Mel B. Williams (back to camera).

PHOTOS BY MICHAEL K. GLASBY

NON MANAGEMENT COMMITTEE

The members (with titles and corporate units designated) of the COMSAT Job Evaluation Committee concerned with all jobs below the manager level are:

JUDITH S. ELNICKI, Director, Public Relations, Public Affairs

HASIN A. HASHMI, Director, Financial Services, COMSAT GENERAL

JOHN J. LEHAN, JR., Manager, Accounting Policy and Compliance, Finance

EUGENE P. MCCARTHY, Manager, Records and Library Services, General Services

WALTER S. MCKEE, JR., Director, Satellite Operations, COMSAT GENERAL

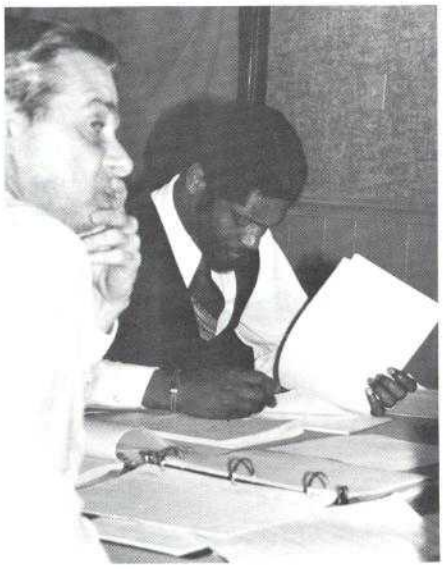
JEFFREY L. RUBIN, Director, Design Fabrication, Research and Engineering

CARL A. SEDERQUIST, Manager, Network Operations and Maintenance, International Communications

M. CAROL SMITH, Department Manager, Orbit Control and Monitoring, Systems Technology Services

BRIAN J. WILLIAMS, Director, Control Systems Engineering, Equipment Integration

MEL B. WILLIAMS, Manager, Human Resources Development, Personnel



Jack Lehan, left, ponders evaluation as presented on a blackboard while Mel Williams studies job description.

PHOTO BY MICHAEL K. GLASBY

MANAGEMENT COMMITTEE

The members (with titles and corporate units designated) of the COMSAT Job Evaluation Committee concerned with all jobs at the director and manager level and which reviews the work of the Non Management Committee to make certain a logical step progression exists in job evaluations are:

ROBERT C. BARTHLE, Assistant Vice President, Systems Development, COMSAT GENERAL

ROBERT W. KINZIE, Assistant General Manager, International Communications

LEWIS C. MEYER, Assistant Vice President, Corporate Procurement Policy, Procurement

WILLIAM D. OSBORNE, Division Director, Equipment Integration

MILTON C. NOMKIN, Associate General Counsel, General Counsel

LOUIS POLLACK, Executive Director, Satellite Communications Research, Research and Engineering

JAMES B. POTTS, Division Director and Chief Engineer, Systems Technology Services

STANLEY L. SHUBILLA, Treasurer, Finance

the quotations used in this article indicate. You also find acknowledgment that the system, because it must of necessity depend on human judgment to work, is not and cannot be perfect. Still most committee members appear convinced that the system is the best possible approach to job evaluation.

Stanley L. Shubilla, Treasurer of the Corporation, says this, "The system is not perfect, but I think the committees are doing the best job possible, and I do think overall the results are reasonable."

Milton C. Nomkin, Associate General Counsel, expresses a similar sentiment, asserting the belief "that to a large extent the system produces equitable results." And Joseph Mahran offers this opinion, "The committees are the foundation of a successful company. If you don't create a fair and logical job structure —one in which paths of advancement are evident—then you're not going to be able to keep your best, most talented people. And they after all are your future."

The Corporation recently sponsored a reception at the Capital Children's Museum marking the opening of its communications exhibit. Here a member of the museum staff, left, operates a computer exhibit for, from left, Michelle Glasby, Tish Fonda (kneeling), Heather Fonda, and Barbara Glasby. Michelle and Barbara are, respectively, the daughter and wife of Michael K. Glasby, Office of Public Affairs photographer. Heather is the daughter of Tish, also of the Office of Public Affairs.

PHOTO BY MICHAEL K. GLASBY

PEOPLE

DORIAN
(Continued from page 20)

than any other person except Thomas Edison, and three of these—the radio telephone (December, 1900), the loop direction finder (January, 1907) and the flashing type sounding machine (March, 1921)—have assured him the title of "Father of Marine Electronics." Although his contributions were in the technical area, the award is given also for achievements in educational, industrial, governmental, or any other area so long as they have meant lasting contributions to the public good through marine electronics.

Son of Clarence Holloman receives memorial fund

In early March the friends and co-workers of the late Clarence W. Holloman, Jr. presented his young son, Clarence Lamar, with $1,700 in savings bonds in memory of his father.

Clarence, COMSAT's Supervisor of Building Maintenance and Operation at the Plaza, died on February 22 after having been shot at his apartment by an unknown assailant on November 24. He never regained consciousness and never bought Clarence Lamar the bicycle he had promised him for Christmas.

Two days before his seventh birthday on March 9, Clarence Lamar was presented the savings bonds and $26 in cash towards a new bike. "The people here today are just a few of your daddy's friends and his work family," Gene Christensen, Manager, Facilities and Office Services, told Clarence Lamar. "They want you to have this present for your future." Assisting in the presentation was Stanley Jordan of the Transportation Office, a close personal friend of Clarence.

Gene Christensen presents $1,700 in savings bonds to Clarence Lamar Holloman.

Those who helped in the collection of the memorial fund were Geraldean Robinson, Brenda Lawson, Mary Bloomfield, Emma Green, Ardella Lewis, Freeman Pryor, Evelyn Braswell, Danette Smalls and Alice Bullie.

After the presentation, Clarence Lamar asked if he could see where his daddy worked and if his father's position could be held open for him. "We'll see what we can do about that," Gene said as he led the young boy to his father's office.

Clarence Lamar Holloman with Stanley Jordan.

Joseph L. Mahran leaves for top education post

Assistant Vice President (AVP) Joseph L. Mahran has left COMSAT GENERAL to become the Chief Financial Officer to the Chicago Board of Education. In his new position, he is directing the financial affairs of one of the largest school systems in the nation.

Mahran says he left COMSAT GENERAL, where he was AVP, Finance and Administration, with real regret, but with keen interest in his new position in Chicago.

"It was an unsolicited offer. I was flattered that they selected me after a national search," Mahran said in an interview in April. "I'll regret leaving COMSAT because of the friends I have here and because COMSAT probably has the greatest potential for success of almost any corporation in the country."

"At the same time, my new assignment represents an outstanding opportunity for public service. It is a chance to bring to bear my background, experience and skills to assist the Chicago school system in solving their financial problems."

Mahran assumed his new position as Superintendent for Finance and Administration (Chief Financial Officer), reporting to the Board of Education of Chicago, on May 5. His salary of $100,000 per year, according to the Chicago press, makes him the highest paid public official in the field of education in the United States.

(More "People" on Inside Back Cover)

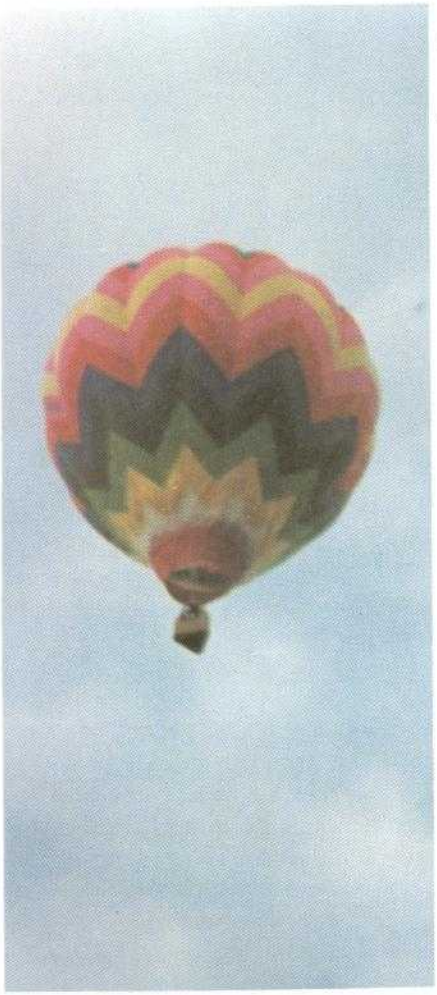
Ballooning, the Olympics' unsung event

By Lisa Cook

I'm sure most of you saw at least part of the coverage of the 1980 Winter Olympic Games at Lake Placid in February, including the pagentry of the opening ceremonies. But how many of you know that there were 41 hot-air balloons from all over the country stationed at five sites surrounding the main staging area, waiting for the winds to drop sufficiently so they could fly?

I was a crew member for one of those balloons, owned by Sally and Henry "Reds" Horrocks, of Monkton, Maryland. Our balloon, a Raven Rally "S" christened *The Pit and the Pendulum* [Keep in mind the balloon manufacturer's name, Raven. Other balloons owned by Reds have been named *Nevermore, Anabelle Lee, Arabesque,* and *Lenore.*] was located at launch site #5—the city dump. We and the owners and crews of seven other balloons were fighting winds over eight knots while trying to inflate our 77,000 cubic foot envelopes (that's enough room for 96 million marshmallows) and keep them steady until we received the signal to launch. Imagine what a beautiful spectacle it would have been: 41 balloons—some striped, some of solid colors with rainbow bands circling the envelopes, some plaids, even several with custom-designed pictures—wafting gently over the stadium, each basket displaying a banner with the name of a country participating in the Games and showering the delighted crowds with rose petals.

That's the way the officials at the Awards and Ceremonies Committee wrote the scene, but Mother Nature didn't read the script.



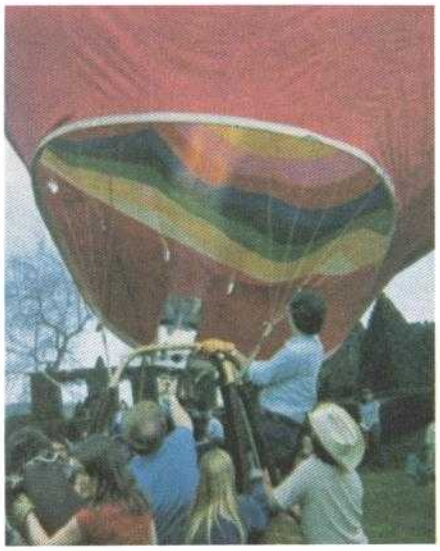
What's supposed to happen: Horrocks balloon floats gracefully upward at a demonstration at Ladew Topiary Gardens, north of Baltimore, in April.

Once a balloon envelope is almost completely inflated by blowing air into it from a high-powered fan, the 11 million-BTU burners are ignited and aimed up into the envelope. As all good COMSAT engineers know, the trapped hot air rises, and the envelope, which has been laid out on its side for preliminary inflation, slowly comes to an upright position. At this critical point, last minute instrument checks are made. If everything is ready, the pilot orders the crew to go "hands off" the basket one at a time, and the balloon floats skyward.

While the seven-story-high balloon is upright on the ground during the checkout stage, the burners must be turned on periodically to maintain the warmer temperature of the air inside the envelope. If the winds are brisk, the envelope is buffeted about, and the skirt—that portion of the envelope at the bottom and nearest the burners—is easily scorched. The crew must work quickly to keep the fabric away from the flame.

We were in just such a desperate situation a short time before the ceremonies were to begin. Our inflated balloon was being dragged around the site by shifting winds and air turbulence caused by several helicopters hovering nearby. The crew was frantically trying to keep the basket and burners aimed up into the

(Continued on next page)



A crew member keeps skirt away from flame as balloon goes through final stage of inflation prior to liftoff.

Ms. Cook is Executive Secretary to William I. Fallon and is based at COMSAT Labs.

(Continued from page 27)

envelope and away from the skirt, when Reds decided it was too dangerous to wait any longer and gave the command to abort. He pulled the "red line" which opened the rip panel at the top of the envelope and allowed the heated air to escape, deflating the balloon. Ten seconds later we finally heard our signal, and the two balloons at our site which were still inflated took off. We were all disappointed because we hadn't been able to fly, but Reds voiced the words of consolation familiar to all balloonists: "It's better to be on the ground wishing we were in the air than in the air wishing we were on the ground."

While we were repacking the *Pit*, we stopped several times to watch the other balloons which sailed overhead. (A total of eight had managed to launch that day.) Piloting one of those was Ben Arbruzzo in a hot-air replica of the *Double Eagle*, the gas balloon that crossed the Atlantic last year.

Later that night, we crowded eagerly around the motel TV to see what the festivities had looked like from the stands. We saw lots of footage of flapping flags and preening pigeons, but no balloons. We did see one blurry picture in the morning paper, but it was too obscure for us to be able to identify the balloon or pilot.

Fringe benefits

As "participants" in the opening ceremonies, the pilots and their crews did have some special privileges. Our vehicles were issued window stickers which allowed us past the checkpoints and into the town of Lake Placid, enabling us to avoid the long bus lines. We were also given badges to wear which admitted us to the cafeteria where the Olympic volunteer workers ate. (We came to refer to the volunteers affectionately as the "blue clones" or "yellow clones," depending on the color of their identical uniforms.) We could also see

Lisa Cook wearing Winter Olympics badge and shirt.

any of the outdoor events we cared to stand and watch. That badge got me into the Mt. Van Hovenberg Area, where I saw a member of the East German team set a new track record in the single luge event.

Our "semi-official" status expired on the day after the opening ceremonies and most of the balloonists left, but I decided to stay on alone. Thursday night I managed to get into the arena to see an elated U.S. hockey team upset the favored Czechoslovakians, and spark hopes for what eventually became a gold medal. Friday morning I stopped at Wintervale, the ski jump venue, and saw the teams practicing on the 70-meter hill. Back in Lake Placid, I watched Eric Heiden train at the speed skating oval. Still later that day, I saw the compulsory segment of the ice dancing competition, and even managed to make my debut appearance on national TV! (All right, so it was only the bottom half of my leg, but it *was* my leg and it *was* on live television with Dick Button.)

Even though our balloon didn't fly as we'd hoped, my Olympic experience is something I'll treasure, crowds and cold feet notwithstanding. Maybe there's a spot for me somewhere at the summer Games in Los Angeles in 1984. . . .

Jury duty, flowers and other matters

By Holly Pryatel

Here is a brief summary of a few of Comsat's personnel policies: We have revised our policy for people who have been summoned to jury duty. As before, supervisors may grant time off for service on a jury. You should notify your supervisor by memo, with a copy to Personnel, of the expected time of service, attaching a copy of the summons to the memo. While you serve on a jury, the company will continue to pay you your base salary. The change in the policy is that instead of submitting the expense allowance you receive from the court to the company, you may keep this money.

You are expected to return to work whenever you are not needed in court.

Time spent on jury duty should be charged to task code 981-9016. For further information, talk to your supervisor, who should have SPI 70-318, "Personal Absence—Court Attendance."

* * *

The company will send flowers to an employee who is hospitalized for serious illness, accident, or childbirth. Also, upon the death of an employee or an employee's immediate family member, the company will contribute $25 to a charity, educational institution, or research foundation, or, if preferred, flowers may be sent to the funeral home, except when the funeral is held overseas. "Members of an employee's immediate family" include the em-

Ms. Pryatel is an Employee Relations Specialist in the Personnel Office.

ployee's spouse, children, parents, parents-in-law, or a relative residing permanently in the employee's home.

If this applies to someone in your department, let your supervisor know the name of the person, the hospital or funeral home, and the charity or day of funeral if applicable. Your supervisor will make known this information to the appropriate Personnel Department or station administrator, who will in turn order flowers or arrange for a contribution. Supervisors have information on this policy in SPI 70-313.

* * *

COMSAT provides paid time off to regular employees who request funeral leave to attend to matters relating to the death of a member of the immediate family. "Immediate family" for this policy includes spouse, child, parent, sister, brother, grandparent, grandchild and parent-in-law.

If you need to be absent from work for this reason, let your supervisor know, and receive authorization before taking leave. Subject to actual need, the following time off may be granted: up to three consecutive days if the death does not require travel to, and overnight residence at, a distant location, and up to five consecutive days if the death requires travel to and overnight residence at a distant location.

More information can be found in SPI 70-317.

* * *

In a previous *Pathways* issue I explained that our Patent Incentive Awards program provided an award of $100 for an individual who files for a patent ($200 for a group), and an additional $100 if a patent is issued ($200 for a group). As announced in March, the amount of the awards has been increased to $150 for filing ($300 for a group) and $250 for a patent issue ($500 for a group).

* * *

Here's some information for supervisors: COMSAT's policies are printed and distributed for inclusion in your Standard Practice Instruction (SPI) manual. If you are a supervisor and do not have one of these red manuals, contact Jim Lawson, Manager of Administrative Policies and Procedures, at the Plaza on extension 6545.

The Personnel Bulletins that are sent out occasionally are for your information about company policies, policy changes, or other information to use in the management of your department. It is one of Personnel's ways of communicating information to you, with the intent that you, in turn, will communicate such information to your employees. It is more effective and time-saving if you communicate to your people rather than have Personnel answer individual employee's questions.

It may be helpful to circulate the computerized Leave Report to your employees so they can monitor their sick leave, vacation, and personal absence. Also, to keep employee records current, you may ask your department members to update their Profile Forms, adding new schooling, change of address or phone number, etc.

If someone calls you wanting reference information on an ex-employee, please refer the call to the Staffing Department at the Plaza on extension 6060, or the Personnel Department at the Labs or Tele-Systems where applicable. We are careful of the type of information we give out on employees and ex-employees to outsiders due to the sensitive nature of employee information.

* * *

You may have discovered that *giving* a performance evaluation can be just as difficult as *getting* one. Your first step is to read SPI 70-404, "Performance Review and Planning," to learn what your responsibilities actually are in providing a performance review. As for the day-to-day evaluation, the key is communications. As the supervisor, you should let employees in your department know what you expect of them regarding task performance, and then let them know how well the task was accomplished. You can't expect people to perform to your satisfaction if you don't sit down and tell them what you want and when you want it. Goal setting and performance feedback are a necessary part of management.

Here are some suggested readings on managing people: *Analyzing Performance Problems*, by Robert F. Mager and Peter Pipe; *Both-Win Management*, by Chester L. Karrass and William Glasser; and *The Art of Being a Boss*, by Robert J. Schoenberg.

Republic of Niger becomes an INTELSAT member

Niger became the 103rd country to join INTELSAT on April 14.

In a brief ceremony at the U.S. Department of State in Washington, D.C., the Ambassador of the Republic of Niger, Mr. Andre Wright, deposited the instrument of accession and signed the INTELSAT Operating Agreement on behalf of his government.

Niger is already linked to the INTELSAT system through its Niamey earth station.

Network Bits
Field Correspondents

Andover
Joanne Witas
Brewster
Dorothy Buckingham
Etam
Bev Conner
Jamesburg
C. B. Marshall
Labs
Norma Broughman
Joan Prince
Blaine Shatzer
MCE Rockville
Shari Properzio
M & S Center
Darleen Jones
New York
Stephen Keller
Pago Pago
Michael Walker
Paumalu
Bob Kumasaka
Plaza
Mary Lane
Santa Paula
Terri Myers
Southbury
Dolores R. Raneri
Tele Systems
Barbara Maddox

JAMESBURG. We welcome **Edward Richardson** who was recently employed as a Junior Electronic Technician. Edward is currently working with Team D. He hails from Marina, California, where he resides with his parents. Before joining us, he spent a tour of three years in the United States Army. Edward is single and his hobbies are skiing, swimming and surfing.

Pictured below are the proud recipients of Certificates for completion of a Cryogenic course recently conducted by **Jim Vienneau** from the M & S Center. The recipients are, **Jeffrey B. Johns** (second from left) and **Pete (Laverne) Oliver,** Facilities Mechanics. They are flanked by presenters **A. J. Stotler,** Station Manager, left, and **Walter D. Robinson,** Facilities Engineer, right.

Believe it or not, the people shown above are engrossed by two small redwood trees. We promise to render an annual report to show the growth over the years of the trees, which were donated by the Carmel Valley Kiwanis Club. They were planted by **Peter Roberts,** Jamesburg's Utility Man, center, assisted by **Cambrel B. Marshall,** Material Control Specialist, left, and supervised by **A. J. Stotler,** Station Manager, right. Oh yes, one of the trees is between Peter and A. J. If you can't see it now, you'll have to wait until later.

—C. B. Marshall

ETAM. **Lynn** and Evelyn **Rector** recently received a new addition to their family—their 4th son—**Nathan Peter.**

Etam has recently welcomed three new employees. **Thomas Pauly** is a new Junior Technician; Tom is single and resides on the outskirts of Kingwood, W. Va. **Donna Keener** came to us as a Circuit/System Order Clerk; Donna also is single and resides in Kingwood. Last but not least, **Phillip Britner** also joined the Etam ranks as a Junior Technician. Phil hails from Rowlesburg, W. Va., and he also is single.

We have certainly had a mild winter this year at Etam. Snow accumulation has been light and March came in like a lion, so perhaps we can look forward to its going out like a lamb and then—Spring!

—Bev Conner

LABS. **Olivia** and **Jack Piontek** had a baby boy, **Andrew Peter,** 9 lbs. 7 oz., born on March 6, 1980, around 3 A.M. at Sibley Hospital. This is Olivia's and Jack's first child. **Olivia** works in the Propagation Department of TSL and **Jack** works at MCE.

Chaim Zaks and wife had a baby boy (first child) **Adam Noam Zaks** born on March 2nd at 2:36 P.M. at the Washington Adventist Hospital. **Chaim Zaks** is in the Propagation Department of TSL. [Editor's Note: we congratulate the department on living up to its name.]

Donna Owens is leaving COMSAT due to her move to Louisiana. **Shirley Taylor** moved into her new solar home which her husband designed and built.

Debby Moore was married to Lt. **Terry Carrico** at the Green Ridge Baptist Church by her father, who is the minister there. Many COMSAT employees attended the wedding; **Debby** has worked at COMSAT, as has her mother **Gloria,** in the Word Processing Center.

After winning eight straight games, the COMSAT Labs basketball team suffered several key injuries which contributed to the loss of the final two league games. COMSAT finished the regular season tied for first place with Hershey's and lost to them in a tie-breaker game. COMSAT also lost in the first round of the Gaithersburg Tournament. With the return of the injured players next year, COMSAT will again field a competitive team.

Among new employees are: **Chris Arant** (MCE), **Mike Hofe** (transferred from TSI), **Paul Blough** (MCE), **Ramesh Gupta, Joyce Stret-**

ton, Stephen Stackwick, Robert Birmingham, Shanti Sharma, Debbie Groomes, Paul Bergmann, Paul James, and **Kenneth Harris** (M&S).

Departing are **Bert Collins, Dave Merritt, and Bill Simmons.**

—B.P.S.

MCE expands! Continued growth within the Monitor and Control Engineering Division has created a need for additional working space. In November 1979, MCE took occupancy of an additional 10,000 square foot site in Gaithersburg, Maryland. Approximately 25 MCE staff, plus the stockroom and SBS TT&C project, have been relocated to the Annex.

Our own **Jerry Barnett,** Manager of the Microwave Systems Department, has recently been appointed by the Mayor and Town Council to the Vienna, Virginia, Planning Commission. Congratulations, Jerry!

Wedding bells rang for **Vicki Harner** and **Dave Burford** in November and for **Lynn Horowitz** and **Bob Daley** in January.

Phyllis Book is proud of the fact that she and her husband **Ron King** spent a week skiing in Canada where they entered ski contests and won first place honors in their individual classes, as well as placing first in the overall men's and women's competitions.

Deke Kayser, Kim Chappell, Lloyd Blackman and **Kelly Augustine** are the newest members of the MCE staff. **Deke** is an engineer working in the Field/Integration and Test Department. **Kim** is a Senior Accounting Clerk whose job includes being Cashier for the Division. **Lloyd** is a Technician Specialist in the Microwave Systems Department and **Kelly** is a "work/study" in the Operations and Services Department. In addition we welcome **Pauline Weller, Jeff Bainbridge, Hayes Huffer** (on loan to us from the Labs), **Mekbib Michael, Rich Lessig, Dinah Crampton** and **Sally Jha.**

—Shari Properzio

PAGO PAGO. TALOFA!!! The Pago Pago CEA held its first social event, the Annual Christmas Party. It was held on site and attended by Earth Station staff and their families. **Anita Tolmie,** from the Governor's Office, with her husband **Marty,** and their family, were special guests at this very successful event. Anita worked very closely with **Bill Surber** putting together the plans for the Inaugural. Teriyaki steak was the order of the day for the 26 people enjoying the beautiful sunset and cool breeze coming off the sea. Dinner was excellent as was the entertainment; Disco Dancing a la **Wayne Colpitts.** After a while everybody got in the act and so the festivities went on until their conclusion later that night.

Mike Walker recently hooked a 130-lb. marlin to take second place in a local sports fishing tournament. The marlin only took 12 minutes to land.

Terry Pullman's wife, Maggie, is back on the island after a long period in the hospital in Hawaii.

Wayne Colpitts, Station Engineer, went to Washington State on his vacation to visit his family and show off his suntan to his friends at Brewster. He stopped off in Hawaii on his way back.

Feo Gebauer was over in Western Samoa during his break. Upon his return, his only comment was, "Give me a break!!!" Malo Feo!

William B. Carroll was in Samoa February 7–9 to look at the New Station and meet the Station Staff.

Otto Haleck and his wife, **Arlene,** are presently enjoying his shift break in Suva, Fiji.

Tala Taumua recently spent a weekend over in neighboring Western Samoa. She was visiting friends and relatives. Western Samoa is an independent island nation, 80 miles away.

Mike Walker and **Feo Gebauer** suffer from softball fever. They are playing on the "Budweiser" team in the local island league. The fast-pitch softball league will last until the end of July. **—Mike Walker**

PAUMALU. **Walter E. Strobel** is the newest member of the Paumalu staff. Our new Electronic Tech joined the station on March 10th, one day after his move from the neighboring island of Kauai where he was employed with Bendix Field Engineering. Walter attended a junior college in Hawaii following his release from active military duty where he gained his satellite communications experience. He is single and resides in nearby Haleiwa.

The reins of the Paumalu CEA have been turned over to Team 4 for the next year. Outgoing President **Robert Makizuru** handed over the financial records to **Norman Kato,** incoming president, on March 1st, signifying the change in administration of the PCEA. Other new officers include **Yoshiaki Daikoku,** Vice President; **Stanley Holt,** Treasurer; **Norman Murakami,** Secretary; and **Paul Motoyama,** Board Member.

Sr. Tech **Yoshiaki Daikoku** recently shed his civilian clothing and donned his Air Force uniform for one month. As a member of the 202 Combat Communications Flight, Hawaii Air National Guard, SMSGT **Daikoku** participated in the annual active duty training with his unit in Seoul, South Korea. **—Bob Kumasaka**

PLAZA. **Don Balazik** has transferred from the Computer Center at Clarksburg to Satellite Orbital Mechanics and Monitoring Dept. **Ron Jennings** and **Terry Lowe** recently visited the COMSAT GENERAL Earth Station at Santa Paula, Calif., to give the station personnel a course in basic orbital mechanics. While there, Ron and Terry also had a tour of the SBS facility at Hughes Aircraft in El Segundo.

COMSAT's noted fishing guide, **Jim Potts,** recently guided **Bob Kinzie** and his wife **Liz** on a very successful trip to Maryland's Eastern Shore. The Kinzies enjoyed the best fishing they ever experienced and were especially pleased with the equipment and luxurious comfort of Jim's Bass Buster Boat. They were also treated to a

once-in-a-lifetime experience of seeing a citation-sized fish masterfully caught by their guide. Their catch has been frozen and is being saved for a bouillabaisse dinner in the near future.

Jim Lawson, Manager of Administrative Policies & Procedures, celebrated mardi gras in Haiti. A frequent traveler to Haiti, he spent his trip on the north coast and in Port-au-Prince filling in some gaps in his photo collection.

Suzy Siguenza, 18-year old daughter of **Lynn Siguenza** of the Project Management Office, has just recorded "Someone Else," a song written by her, which will be on the upcoming student album from Frostburg State College. This is the second song she has recorded, the first one being "See You Again," which is expected to release on the air shortly this year. Suzy is the Vice President of Nexus Studio Prods., the organization making the albums where she has already co-produced two albums. There was a concert to promote the album on 26 March at Frostburg State College, where Suzy is a Sophomore.

David Dargitz, son of **Donna Higgs,** ITU Office Coordinator, placed third overall in Technology in the Glasgow School Science Fair held in February, with his exhibit on the INTELSAT V (shown). David was invited to participate in the Regional Fair to be held in March; however, he was unable to attend.

Deanna Fuimaono Lutu, daughter of Senator and Mrs. Fuimaono Lutu of Fagatogo, American Samoa was selected by the American Samoa Society of Washington, D.C., as their Cherry Blossom Princess during the National Cherry Blossom Festival which took place from March 24 to 29. Deanna is a sophomore at Fresno Pacific College, California, majoring in Criminal Law. She is also the niece of **Apaula Kuresa-Brown** who is with the Finance and Contracts division of Systems Technology Services.

Deanna was among 53 princesses from 50 states and three American territories who were escorted by their senators and congressmen during the Congressional reception at Capitol Hill on Wednesday, March 27. The American Samoa Princess was escorted by Hon. Fofo Sunia, Delegate from American Samoa to the U.S. Congress. (See photo above.)

Don Krivos, Writer, Documentation Services, was recently re-elected to his fifth one-year term as president of Brunswick Midget Football Boosters, Inc., an organization which provides a coaching staff, equipment and game expenses for approximately 120 boys and girls, ages 8 thru 13, in the Brunswick area. Brunswick plays in the ten-member Mountain Valley Midget Football League which serves Frederick, Washington, Carroll and Montgomery counties. Don also serves on the Board of Directors of MVMFL.

In January, 1980, **William L. Mayo,** Vice President, Marketing and Business Development, COMSAT General Corporation, was appointed to the Board of Governors of the National Space Club, (organized as the National Rocket Club) and founded in 1957 to promote the recognition of United States achievements in space. **—Mary Lane**

TELESYSTEMS. The move of offices and manufacturing personnel from Alexandria and COMSAT Labs has been completed and we are now together at our new address: 2721 Prosperity Avenue, Fairfax, Virginia 22031 (Telephone: 698-4300). The move was successfully completed in late December and our two modern well-equipped buildings are now "home" to over 125 employees.

Many new people have been added to our staff since the last issue of *Pathways.* A Christmas get-together was held at the Springfield Hilton that brought many of us out for a fun evening of dancing and getting better acquainted.

Several of our ski enthusiasts and

(Continued on Inside Back Cover)

their friends joined with the CEA ski group for trips to nearby resorts. Some of our people also planned a TSI ski trip to Ski Liberty, and a good time was reported by all, with no injuries mentioned.

Forsaking the snow, **W. Graham Snyder,** Manufacturing, left TSI for an exciting adventure in the South Pacific. Graham will be sailing on the Alysse Maru, a sister ship to the famous Calypso, on a one-year voyage around the world, working as a seaman with hopes of doing a great deal of diving.

Maura Schimley, Finance & Administration, spent several days recently wringing water out of her clothes after pipes in the apartment above hers burst, causing damage to several adjoining apartments. **Bob Shea,** Marketing, was welcomed back to the office after surgery. **Linda Neely,** Personnel, is awaiting the birth of her first child in May. **Tina Griffin,** Procurement, wed **Greg Lee** in March. **Ivan Riley** and his wife vacationed in Ireland in March, spending St. Patrick's Day in the land of the shamrock.

Marketing's **Pam Richardson** has a couple of interesting titles including **Mrs. Rod Richardson** and Spec. 5 **Pam Richardson.** Pam is an Army reservist who recently wed Captain **Rod Richardson,** and the wedding was newsworthy enough to make the front page of the February issue of the 310th TAACOM News. The Army's point of view on "fraternization" between Officer and Enlisted was explained. Since Pam and Rod are in different sections, all is well. Pam recently completed two weeks' active duty in Germany.

TeleSystems occupies buildings on the site of an old farm and stable. With cars whizzing by on Route 66 in the background, and cattle grazing only a mile away, we are reminded of the rapid growth of the area, satellite technology, and TeleSystems. Now we see grass sprouting from under the litter of construction . . . we look forward to the future.

—**Barbara Maddox**

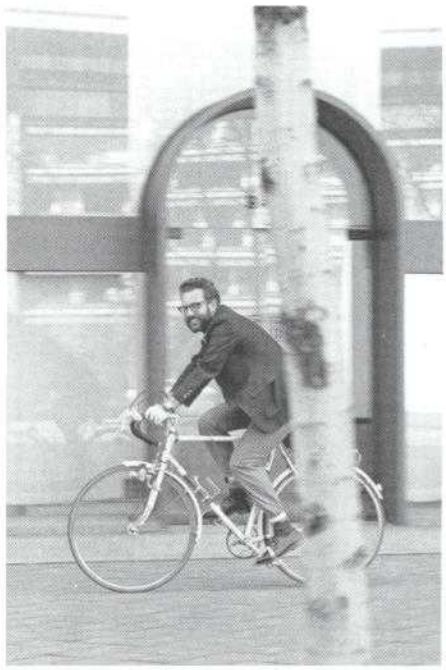
PEOPLE

Bicyclist Jeremy Parker WABA Treasurer again

Jeremy F. Parker, Manager, Access and Control, in COMSAT GENERAL's MARISAT System Management Division, was reelected this fall to his third term as Treasurer of the Washington Area Bicyclist Association (WABA).

WABA is an organization attempting "to obtain a better deal for cyclists." It offers such things as a legal advice service, a guide service for new commuters, consumer ratings of local bike shops, studies of safety equipment such as helmets, a newsletter, and books on where to ride around Washington and on riding techniques.

Jeremy Parker began riding to the Plaza as soon as COMSAT moved in, originally chaining his bicycle to the railing around the hole in the ground that is now the hotel. He is one of approximately one half dozen COMSAT cyclists at the Plaza, and he estimates that by riding his bike to work he saved COMSAT $1,209.00 in parking fees during 1979. Jeremy Parker notes that it is exceptionally



easy to ride to the Plaza, because there are off-the-road routes leading there from almost any direction, through D.C. parks. There even are showers at the Plaza.

Now L'Enfant Plaza has made cycling even easier by erecting a new bike rack in front of the building, sheltered from the rain, in the southeast corner of the square.

Jeremy Parker welcomes questions on cycling or on WABA. Call him on 6879, or see him in Room 3204.

The 13th Annual Meeting of the COMSAT Federal Credit Union was held in Luciano Pizza in March. Here Jane Boyd picks door prize ticket from box held by James H. Kilcoyne Jr., Credit Union President.

SATELLITE Pathways

Third Issue/1980
Volume 5 Number 3

First in a series on International Communications: Irving Goldstein looks to the future.

COMSAT COMMUNICATIONS SATELLITE CORPORATION
COMSAT GENERAL CORPORATION

SATELLITE Pathways

Third Issue/1980
Volume 5 Number 3

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CONTENTS

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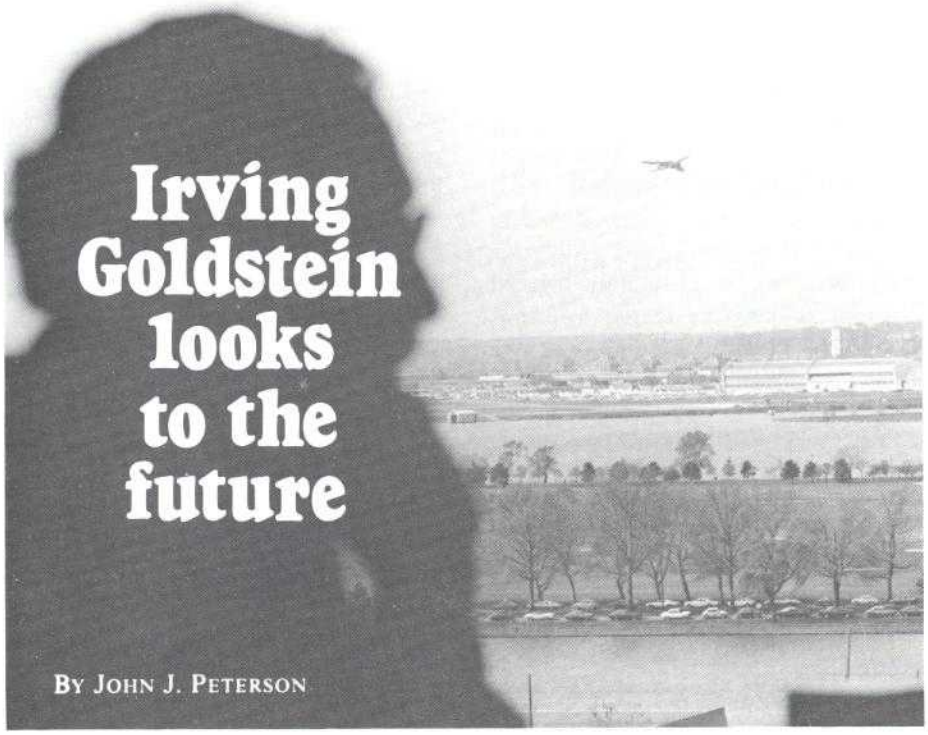


Irving Goldstein looks to the future

By John J. Peterson

First in a series on International Communications

In the next several issues of Pathways, *a series of features will be presented dedicated to the activities of International Communications, the segment of* Comsat *responsible for implementing the goals set forth in the Communications Satellite Act of 1962 which created* Comsat. *The recent successful inauguration of* Comsat's *newest earth station in American Samoa represents the latest venture of International Communications, which provides international satellite telecommunications and related services to U.S. users via the global* Intelsat *satellite system, manages and operates U.S. earth stations which work with the* Intelsat *satellites, and is responsible for representing* Comsat *as the U.S. Signatory to* Intelsat.

Irving Goldstein, Vice President and General Manager of International Communications, discusses the challenges facing International Communications and Comsat *in the decade ahead in this issue. In subsequent issues the four functions of International Communications—Marketing, Operations and Representation, Financial and Project Control and U.S. Communications Systems—will be described.*

"If I were to project International Communications into the future, become a visionary for the 1980s if you will, I would envision the next ten years as the decade of growth and change in satellite communications, and as a period of opportunity for Comsat. I expect it to be a period in which the Corporation will be becoming involved in a number of new activities, new activities which we expect will be extremely dynamic, interesting and, we hope, profitable.

"The next few years, then," continued Irving Goldstein, Vice President and General Manager of International Communications, "will be a period of start-up for these activities. International Communications has a very large responsibility not only to ensure that this fundamental Intelsat business continues to maintain itself, but that it meets challenges in its own area of business by anticipating demands and new services.

"So I see my commitment," said Goldstein, "in the same light as do the other senior executives of the Corporation, as a member of a team committed to carrying out our statutory mandate to the fullest while also striving to achieve a variety of business goals. And I think we're making great progress in this direction.

"As Vice President of International Communications, I am in an extremely advantageous position as we enter this 'decade of challenge.' First, I have the benefit of being able to draw on the knowledge of a mature staff experienced in international telecommunications operations. Secondly, there is the advantage of being involved with a technology that by all estimates is entering an era of tremendous growth. Finally, I have an established line of business to operate, established in the sense that International Communications is an on-going and successful business."

Reflecting for a moment on the overall telecommunications picture, Goldstein is not sure that present day predictions of an "explosion" in the industry worldwide have not, in reality, already been overtaken by events; that actually, the explosion began in the late 1970s and is now well underway.

"So many factors are involved today," continued Goldstein, "economics for one, that predictions, even near-term ones, would be fairly speculative. But looking at long-term growth, let's say to 1985 as the first phase and then toward the end of the 1980s, it appears that instead of a diminution of demand in international communications, just the

(Continued on next page)

Mr. Peterson, the former Editor of PATHWAYS, is now a freelance writer in the Washington area.

IRVING GOLDSTEIN

(Continued from page 1)

opposite will be true. And a look at the experience of the communications industry will bear me out.

See the photo story on Irving Goldstein beginning on page 25.

"Let me emphasize this point with a few specifics. I recently had occasion to look at a couple of our Annual Reports and it was striking to recollect that, in 1965, satellite service was available only between North America and Western Europe —one satellite path. However, by the end of 1970, a span of five years, there were 131 paths linking 30 nations over five satellites. Less than 10 years later, there were 647 satellite pathways in use throughout the INTELSAT system operating at 197 earth stations in 96 countries over satellites stationed above the Atlantic, Pacific and Indian Oceans. By the end of July 1979, the number of pathways had climbed to 704.

"This expansion has been paced by technological change," Goldstein said. "We have gone from the 240-circuit Early Bird through the INTELSAT III series of communications satellites of the late '60s and early '70s with a capacity of 1,500 circuits, the IV-AS with their 6,000-circuit capacity, and this year, 1980, will begin launching the satellites of the INTELSAT V series each with a circuit capacity of 12,000."

The INTELSAT V generation of satellites, eight of which are already on order and planned for launch over the next two-to-three-year period, will be able to accommodate communications well into the '80s but will have insufficient capacity to carry Atlantic Region Primary traffic beyond the mid '80s, according to Goldstein. This insufficiency will not result from the loss of satellite life but because capacity will be exceeded by demand.

"So, as I see it," said Goldstein, "it is critically important for both INTELSAT and COMSAT to be responsive to and to anticipate demand. We now have underway, in both organizations, very extensive planning for the satellites and the techniques we will need to utilize, starting as early as the mid - '80s. This means that hardware and systems need to be designed and procured within the next two years and that this early planning is absolutely critical in order to keep us in the forefront of the telecommunications industry in the second half of this decade."

In addition to the growth factor to be considered in the "decade of challenge," there is also the element of change: change in the technology and change in the operating environment. First, there is the necessity for technological change to meet the demand and to keep up with the competition.

"It is frequently held," said Goldstein, "that there is no competition in our business, that we have a monopoly handed us on a silver platter. This is far from being accurate. Cable technology has made great strides and is also on the threshhold of a significant change: the use of submarine optic fiber cables. Presently the cost of cable circuits is higher than that of satellite circuits, although the introduction of optic fiber cable will help reduce the cost of cable circuits which in turn will benefit the user. Thus it is necessary that there be continued breakthroughs in satellite technology to maintain the competitive edge satellite circuits presently have over cable circuits. This, then, is a technological challenge I see in the immediate future."

"With an inter-satellite link we could send a signal to an Atlantic Region satellite, which could be linked to a satellite located further east that we can't see . . ."

In addition, he predicts increased utilization of satellite capability, and he points to the development of inter-satellite links. "Inter-satellite links, which, literally, will enable two satellites to function as a single satellite, offer very important prospects for future use. For example, one prospect has two large satellites linked in a manner that, as far as the users are concerned, makes them appear as if they are one gigantic satellite. Yet this capability, although costly, will be achievable at a fraction of the cost that would be required to design, build and launch a single satellite of comparable capacity, especially since launch costs are a major component of the cost of any satellite system.

In addition to keeping down costs, according to Goldstein, inter-satellite links will permit more areas of the world to become visible than at present. "The geography of the world is such that from the East Coast of the United States we can see as far as a part of the Middle East. From the West Coast and Hawaii we can see as far as a part of the Far East. But in between those two areas there is a gap. It is this gap that is served by the Indian Ocean Region satellites covering a substantial portion of Asia including the Indian subcontinent. This is an area that we cannot now see directly by satellite."

Geography has been kinder to the Europeans, and by satellite they can see all of the major land masses of the world with the part being invisible to them lying in the Pacific Ocean and the only major populated area not visible being Hawaii. However, excellent communication links between the mainland of the United States and Hawaii available to the Europeans eliminate this potential handicap.

"Our inability to see a substantial portion of the Indian Ocean Region is a handicap," continued Goldstein. "With an inter-satellite link we could send a signal to an Atlantic

Region satellite, which could be linked to a satellite located further east that we can't see that would then give us direct access to portions of the Indian Ocean Region not presently directly visible to us. The development of this technology is now underway and it is not unreasonable to anticipate utilizing inter-satellite links later on in this decade."

Many of the innovations Goldstein sees contributing to the technological advancement of satellite communications have been either developed at, or improved by, COMSAT Laboratories. Among COMSAT-developed breakthroughs is TDMA/DSI (Time Division Multiple Access/Digital Speech Interpolation) an extremely promising modulation access technique which will allow much greater benefits from the bandwidth available for satellite communications. It is expected that such technologies will come into use during the INTELSAT V era and mature in the INTELSAT VI era starting in the 1985-1986 time frame. Another significant development he sees evolving before the end of the decade will be the utilization of new frequency bands which were allocated to satellite service by the 1979 World Administrative Radio Conference (WARC).

Goldstein sees the telecommunications industry continuing to move from analog to digital with all forms of communications, including voice and video, becoming digitalized. COMSAT presently offers its DIGISAT service, which has the equivalent transmission capability of 70,000 words per minute, permitting the full page of a newspaper to be transmitted digitally in a matter of seconds, a full photo negative of the same page in five minutes, and computer-to-computer information, which previously took eight hours by conventional links, in 30 minutes.

"You will remember," Goldstein went on, "that I made the point that change included change in the operations environment. This dimension, which is of significant import to COMSAT, relates to the basic manner in which COMSAT provides services to its customers and is presently under review."

"The future is bright. I see enormous growth in the next decade at no lessening of pace over the previous one."

Elaborating further, he said he sees the possibility of a broadening in COMSAT's relationship to its existing and potential customers, in addition to the present "carriers' carrier" role. In a recent order of the Federal Communications Commission (FCC), the FCC made clear that it felt the limiting policy of furnishing TV to a user through the "carrier of the week" rotational system is outmoded and that there were certain circumstances under which COMSAT could provide services to certain categories of users directly. As an example of this, Goldstein points to the television industry which, if the new thinking prevails, would permit a broadcaster to make his own arrangements to go from the city from which he is broadcasting, say to Andover, for example, where he could interface directly with the COMSAT earth station. COMSAT could then sell him the necessary circuits allowing him to communicate to and from a foreign point.

"Under this new approach," continued Goldstein, "we would be able to provide TV service to any user at any time. There would no longer need to be a 'carrier of the week.' This represents a very significant change in concept. Carrying this a step further, the Commission might want to encourage greater competition with respect to the provisions of other services such as private line services. In such instances, COMSAT would furnish services, on a competitive basis, directly to multinational organizations requiring overseas full-time communications links.

"Let me emphasize the point that exclusive of television this is all in the thinking stage, and I doubt that any determinations will be made by the time this article is printed. And we can expect that protests will be filed by those affected by such a change in concept. But I think the point is worth making that the Commission appears to be oriented towards deregulation and a concept which enhances competition whenever possible—recognizing, however, that the basic responsibility for international satellite communications in the United States is exclusively COMSAT's.

"Undoubtedly, such a change in concept would affect our way of doing business significantly. But it should be stressed that the one who comes out ahead as the result of such a change is the user, who will be able to obtain satellite communications on a more economically responsive basis. Actually we are just beginning to understand the implications of this change in concept, and it will be years before all the changes are implemented."

"The future is bright," concluded Goldstein. "I see enormous growth in the next decade at no lessening of pace over the previous one. If we continue to expand our expertise in the telecommunications industry, if we stay alert and adaptable to technological change and if we continue to apply concepts that improve the performance and cost of satellite communications, International Communications and COMSAT can look forward to a continuation of its vital role in the field of worldwide communications. And it is my hope that International Communications can make a major contribution to this future."

Shareholders Meeting 1980

The 17th Annual Meeting of COMSAT shareholders was held at the Four Seasons Hotel in the Georgetown section of Washington, D.C. on May 16. At the meeting, the shareholders re-elected 10 directors and elected two new directors, Frederick B. Dent, a former Secretary of Commerce, and Lewis W. Foy, Chairman of Bethlehem Steel Corporation.

At an organizational meeting of the Board of Directors following the Annual Meeting, Joseph V. Charyk was re-elected as President and Chief Executive Officer and John D. Harper was re-elected Chairman of the Board.

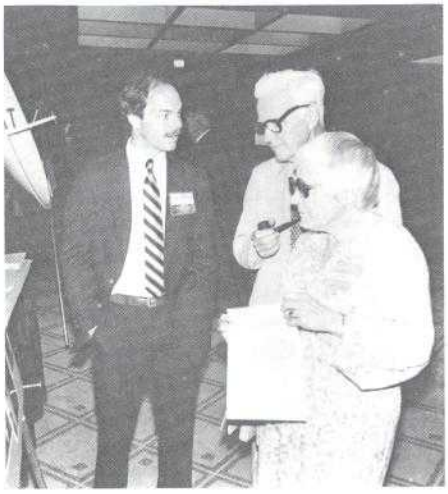
Mr. Dent and Mr. Foy replace Joseph H. McConnell and Gordon Edwards, both of whom have retired from the Board. Mr. McConnell had been a director since 1969 and was Chairman of the Board from 1970 to 1979. Mr. Edwards had been a director since 1971 and was Chairman of the Board and Chief Executive Officer of Kraft, Inc. To honor Mr. McConnell for his years of service as Chairman, the directors named him Chairman Emeritus.

The 10 directors re-elected at the Annual Meeting are Joseph V. Charyk, William W. Hagerty, John D. Harper, John A. Johnson, Melvin R. Laird, Howard J. Morgens, Ellmore C. Patterson, Charles J. Pilliod Jr., Bruce G. Sundlun and William L. Zimmer III.

Shareholders appointed the firm of Deloitte Haskins & Sells to serve as COMSAT's independent public accountants for 1980 and rejected a shareholder's proposal.

The texts of the reports presented by Chairman Harper and President and Chief Executive Officer Charyk follow:

This year's Shareholders Meeting was held at the Four Seasons Hotel in the Georgetown section of Washington, D.C.



In the exhibit area outside the meeting room, George H. Billings explains satellite-to-home television concept to shareholders.

Report of Chairman Harper

SINCE BECOMING Chairman of the Board a year ago, I have been in a particularly good position to take stock of the staff and resources of the Corporation. And I can tell you without hesitation or qualification that the company is extremely well-endowed with talent and technological expertise and is in a sound financial position to meet the challenges of the future.

To the staff itself this means that COMSAT can continue to provide a creative environment in which the talents of each individual are given full expression in our quest to advance the science and application of satellite communications.

To the shareholders it means that the Corporation is in an excellent position to initiate, promote and provide new kinds of services that can increase the worth of the company and the profitability of its operations.

And to our country and much of the world it means that COMSAT can continue as an invaluable resource to which all can look for leadership and initiative in extending the frontiers of the technology which the company has been so instrumental in generating in its relatively short life.

The promises of the future are rooted in the accomplishments of the past. And our accomplishments are, indeed, impressive.

Under COMSAT's leadership, a global satellite system that now carries the majority of the world's intercontinental communications came into being at an earlier date than most thought possible. In just 15 years the capacity of a single INTELSAT system satellite has grown from 240 circuits in the EARLY BIRD satellite launched in 1965 to 12,000 circuits in the INTELSAT V that will be launched later this year.

Through the work of our laboratories and the expertise of our staff we have enabled many developing countries to leapfrog from primitive to space-age communications.

And through the lead we took in establishing the world's first maritime communications satellite system we have laid the basis for the global system to be established by the International Maritime Satellite Organization—INMARSAT.

Now that our primary statutory mission has been achieved and certain of our programs are approaching their completion, we look ahead to the opportunity to provide new kinds of services that will contribute significantly to the profits of the Corporation and the public good. And in this regard I am particularly pleased to note the FCC's recent pronouncement that COMSAT should not be foreclosed from applying its technology and expertise to the development of new lines of business.

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Report of President and Chief Executive Officer Charyk

GOOD MORNING. I am delighted that so many of you were able to attend this year's meeting. I am also pleased to be able to report that this past year has been a good one for the Corporation. Earnings for 1979 were up 17.4 percent on record-high revenues of $262.6 million, reflecting revenue gains from all segments of our business. Net income reached $5.02 per share, the highest level in our history.

1980 is a period of transition in our operations. It is a time when certain of our major revenue producing programs have reached maturity. Earnings from our COMSTAR program, for example, have begun to level off, and as anticipated, the U.S. Navy has started to reduce the amount of service it is receiving through the MARISAT satellites. All of this is occurring at a time when we are trying to move forward with newer programs, to diversify and lay the groundwork for future growth. In particular, the expenses of Satellite Business Systems, our joint venture with IBM and Aetna, are increasing substantially as we approach the time for the launching of the first satellite later this year and the beginning of commercial service early in 1981. Accordingly, our level of earnings in 1980 is not likely to reach the 1979 level.

Last month we reported earnings of $9.9 million or $1.24 per share for the first quarter of this year. This represents a decrease of 25 cents per share from the first quarter a year ago. However, there are some very fundamental differences between the first quarter of this year and that of 1979. We have seen major increases in start-up expenses associated with the development of new business ventures. We have seen the decline in MARISAT revenues from the Navy. In addition, commercial traffic to and from Puerto Rico is no longer carried on the INTELSAT system but has been transferred to a domestic system. We also have made two rate reductions amounting to 20 percent in our international tariffs. Although our basic business continues to grow and expand at a very encouraging rate, these factors, plus the very uncertain economic climate, produce a situation in which we do not expect our 1980 earnings level to equal that of 1979.

I would like now to review briefly the status of our INTELSAT, COMSTAR and MARISAT operations and then discuss some of our newer undertakings.

Our INTELSAT system services continue to show vigorous growth. In 1979 the heavy demand for international satellite communications produced our largest annual traffic growth in a decade. In view of our traffic growth, and following discussions with the FCC staff, we

(Continued on page 7)

Harper

As you may know, the FCC recently announced the results of a study on COMSAT that the Congress required when it designated the Corporation as the U.S. participant in INMARSAT. Concerning the scope of our activities, the Commission said that it saw COMSAT's involvement in diversified satellite-related lines of business as in the public interest and contributing to the overall development of satellite communications technology. We are encouraged by the fact that the Commission recognizes the Corporation's outstanding accomplishments and wants it to continue as an innovative and dynamic enterprise with adequate opportunity for growth.

The Commission is also proposing certain controls and safeguards to meet concerns it has in light of COMSAT's diversification into new activities. The Commission is proposing measures to guard against what it sees as potential conflicts of interest, cross-subsidization among services and competitive advantages that COMSAT might have by virtue of its statutory roles in INTELSAT and INMARSAT.

Although we do not believe there have been any abuses, we certainly are agreeable to appropriate safeguards that would meet any legitimate concerns, so long as they do not compromise our operational flexibility or inhibit us from conducting the business in an economically efficient manner. We want to make sure that we will have the flexibility to use our staff and resources in the most efficient way.

One of the measures proposed by the Commission is to require the Corporation to maintain its INTELSAT and INMARSAT functions in one corporate organization and its other business activities in another. We see this basically as an adjustment of the current distribution of functions between the parent corporation and our COMSAT GENERAL subsidiary. We have been working on some possible changes that would be consistent with the organizational principles proposed by the Commission as well as our own standards for optimum use of our people. And our Board will be considering them at its meeting this afternoon.

The Commission's proposals and recommendations are broad-ranging and will require additional detailed study. Although we find some of them to be workable, others leave us with considerable concern. For example, we have basic concerns about the Commission's recommendation to have the Congress consider including government representatives in our delegations to INTELSAT and INMARSAT meetings. We believe that this requirement would be counterproductive to effective U.S. representation in these international organizations. We also have fundamental reservations about the Commission's proposal to place our laboratories in the Corporate subsidiary and to impose various conditions on dealings between the labs and the parent corporation. We are concerned that these proposals will not only impair a valuable corporate asset but also a unique national resource. These proposals raise significant impediments that we will address along with other issues in further proceedings before the Commission and in any hearings that may be convened by the appropriate subcommittees of the Congress.

On the same day the FCC announced the results of its study on COMSAT, it also announced other proposed actions that are designed to stimulate competition and promote efficiency, greater diversity of services and consumer choice in the international telecommunications field. The Commission is proposing to allow consumers of international satellite services to obtain service directly from COMSAT. Currently, only television entities are authorized to obtain service from COMSAT without going through other international communications carriers. In addition, the Commission is proposing to remove all restrictions on the resale and shared use of international telecommunications services at the retail level.

These proposals are among a number of major actions and policy changes the Commission has in mind in connection with the way international communications services are offered to the public through both undersea cable and satellites. The prospect of being allowed to serve consumers directly raises some

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decided it would be appropriate for us to reduce our rates. We put a general 15-percent rate reduction into effect in May of last year and a further reduction of 5 percent in February of this year. INTELSAT communications traffic in 1980 is not expected to expand at the exceptionally high 1979 rate, and major world economic problems produce serious uncertainties as to what may actually evolve in the months ahead insofar as world telecommunications services are concerned. Nevertheless, to date we remain relatively optimistic about 1980 trends.

The first satellite in the new INTELSAT V series is now slated to be launched in October. The INTELSAT V satellites represent a noteworthy departure from the spinning, cylindrical satellites that have been a characteristic of the INTELSAT system since its inception. These new powerful satellites have a box-shaped main body from which extend two large, flat, wing-like panels lined with thousands of solar cells to power the satellite. Unlike its spin-stabilized predecessors in the INTELSAT system, the body of the INTELSAT V will be stabilized along three axes.

The satellite measures more than 50 feet from wing-tip to wing-tip, and it has the capacity to carry up to 12,000 simultaneous telephone conversations plus two television channels. This is double the capacity of the most sophisticated INTELSAT satellite now in orbit—the INTELSAT IV-A. The unprecedented flexibility and increased capacity of the V's are needed to handle the growth in communications traffic throughout the system. The first two V's will be put into service to help carry the rapidly expanding load in the Atlantic Ocean region.

Placing the INTELSAT V satellite in orbit will entail the most intricate series of maneuvers ever performed in the launching of an INTELSAT satellite. A key support role will be played by COMSAT's newly-constructed Satellite Launch Control Center, which will guide the satellite to its final orbital destination after the spacecraft has achieved transfer orbit. The new control center, which is located on the ground floor of COMSAT's headquarters building, will provide similar support services for the launching of a variety of satellites during the 1980s.

The control center is only one of many ways in which COMSAT supports INTELSAT activities. Over the years the INTELSAT system has also benefited from the work carried out at COMSAT Laboratories, which, to our knowledge, is the world's only research and development facility dedicated exclusively to communications satellite technology. The Laboratories continue to make valuable contributions to INTELSAT's growth and development. They are an indispensable resource if we are to maintain U.S. leadership in communications satellite technology. Because of COMSAT's expertise and record of technical accomplishment, INTELSAT continues to be dependent on us for crucial support services of this kind.

In addition to the growth we experienced in our INTELSAT system services, the revenues from our two other principal services—COMSTAR and MARISAT—also experienced growth in 1979. COMSTAR revenue increased because 1979 was the first year in which three COMSTAR satellites, whose capacity is leased to AT&T, provided service for all twelve months. Revenue from the COMSTAR program will stabilize through mid-1983, when the lease periods for the first two satellites expire.

We are nearing formal agreement with AT&T to launch a fourth COMSTAR satellite, which currently is serving as an on-the-ground spare. The launch, of course, would be subject to FCC authorization. Having the fourth satellite in orbit would enable us to co-locate the two oldest COMSTAR satellites, reduce their power load and thereby extend the life expectancy of their batteries. This in turn would increase the probability of providing full service under the agreement. Moreover, in the unlikely event of an in-orbit failure, service could be restored promptly without the necessity of a lengthy delay pending another launch.

The launch of the fourth COMSTAR, at a net additional capital investment of nearly $2 million, will increase our basic revenues in the program by $3.9 million, and could potentially add another $24.6 million in revenues from 1983 to 1986 if addi-

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Harper

interesting possibilities for the Corporation. But before we are in a position to comment definitively on the Commission's proposals, we will have to examine all of the proposed changes carefully to determine whether in practice they will give satellite services a full and fair competitive opportunity.

As I mentioned earlier, the FCC was directed to conduct its COMSAT study by the same legislation that designated the Corporation as the U.S. participant in INMARSAT. The INMARSAT organization, which now includes 29 countries, has before it the task of establishing a global maritime satellite system. This will require a substantial investment. And COMSAT, with an initial investment share of about 23 percent, will have to shoulder a sizable part of it. Thanks to COMSAT GENERAL'S initiative in the MARISAT program, the development of the market for commercial maritime communications satellite services is well underway. But it will take a long time to build up this business to the point where revenues from the service itself can cover the costs and produce a fair return on our investment.

The question of how the shortfalls can be overcome in the foreseeable future is one which we and the FCC believe deserves serious consideration. We are pleased that the Commission has given sympathetic recognition to this problem in the report on its study and intends to give further consideration to ways of resolving the problem. The Commission's comments on the matter demonstrate a flexible attitude, and we look forward to working with the Commission to find the best solution.

The Corporation, thus, is entering a period of transition in which many important issues will be resolved and new programs and initiatives will be undertaken. Dr. Charyk will discuss our principal new activities and interests in his remarks. But before turning the podium over to him I want to leave you with one final thought. It is that with transition and change come exciting new opportunities, especially in our industry whose technology offers dramatic and promising new ways of rolling back the frontiers of mankind's communications capability. The extent of our capabilities will be limited only by the breadth and depth of our vision and imagination.

Simply put, our goal is to develop and apply satellite communications and related technologies wherever we can do so—in the interests of the public for better and more economical services and in the interests of our shareholders for corporate growth and increasing returns on their investment. If we are to continue to progress and meet this goal, we must have a regulatory environment that will enable us to retain, challenge and motivate our bright people. I have faith that in such an environment our company can and will succeed.

Charyk

tional optional service is ordered by AT&T.

MARISAT revenue increased during 1979 because of growth in our commercial maritime services. Currently, there are 362 MARISAT ship terminals commissioned for commercial operation, 145 more than at this time a year ago.

We expect the commercial services to continue to increase during the remaining period of the MARISAT program. But we cannot expect this growth to compensate fully for the decline we are experiencing in MARISAT service to the U.S. Navy. The Navy is depending more heavily on its own increasing in-house satellite capability as it approaches the end of its contract for MARISAT service.

Since the MARISAT satellites are expected to be capable of providing service to 1984, the Corporation is seeking customers in addition to the U.S. Navy. COMSAT GENERAL has contracted with the United Kingdom to lease to the Royal Navy capacity in the Atlantic region satellite from 1981 to 1984, assuming FCC authorization. The rate for this service will be about $1.7 million per channel year. The amount of additional revenues this will produce will depend on the service options the Royal Navy chooses.

At last year's annual meeting, we outlined the steps we were taking to expand our operations into new areas. We stressed the need for the Corporation to diversify and apply its cash resources to new ventures that will take the place of those existing programs that are of limited duration. At this time last year we had just completed the acquisition of Environmental Research & Technology, Inc. (ERT). We are still in the process of integrating ERT's operations with our own for maximum effectiveness. With ERT as the cornerstone, we are seeking to introduce satellite communications into the growing environmental information services field. We are convinced that this area is one of great promise for the Corporation, but it is still too early to gauge precisely what the full business potential may be.

The Chairman has discussed our involvement in INMARSAT. Through our representation in the INMARSAT Council, we are involved in efforts to establish the first INMARSAT space segment. The Council has requested proposals for the lease of satellite capacity from prospective suppliers. Commercial operations could begin as soon as late next year or early in 1982.

Building upon our reputation for technical excellence and our preeminent position in satellite technology, we are expanding the scope of our technical services offerings to appeal to a wider range of domestic and international customers. Among our current clients are SBS; ARABSAT, an organization of Arab states that is planning a regional system; and the governments of Saudi Arabia and Colombia which are developing domestic satellite systems.

For the U.S. Postal Service, COMSAT has designed and is in the process of testing INTELPOST, an international electronic message service. The Corporation also has

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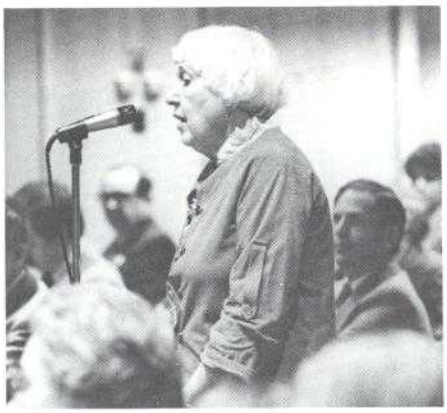


A shareholder asks a question from the floor.

agreements with the postal and telecommunications administrations of several participating INTELPOST countries to provide technical assistance, including procuring, testing, and integrating the hardware and software each country will purchase.

Last year we announced the formation of COMSAT GENERAL TeleSystems, Inc., a new subsidiary, to develop and manufacture certain specialized telecommunications products. TeleSystems is still very much in a startup phase. It has begun, however, to market a number of items, one, for example being a device to eliminate the echo from telephone conversations, a very important element in ensuring high quality satellite voice services. We have proceeded cautiously in this area as we explore the potential market for many of the products we might offer.

In what could become our most innovative and far-reaching new program, we are working on the development of a system to provide subscription television service by satellite directly to American homes.

Last month COMSAT GENERAL and Sears terminated discussions concerning a possible joint venture to provide this service. Sears decided that it did not want to make an equity investment at this particular time even though it expressed a continuing interest in the business potential of the venture.

We remain very much interested in the early establishment of a satellite-to-home system, and we are in discussions with a number of companies having strengths that complement our own. Our goal is to bring together the combination of financial capabilities, experience, and skills necessary for the most successful pursuit of this exciting business opportunity.

The system would feature several channels of programming beamed by satellite to small antennas installed on the rooftops of subscribers' homes.

Subscribers would pay a monthly charge that could be less than many families now pay for a night out at the movies. Supplementing the existing commercial network and local television services, the proposed satellite television service would increase the amount and diversity of programming available to the American public. It would bring a rich variety of program choices to many rural and remote areas of the country for the first time. And it would have the capability to deliver programming to audiences with particular viewing interests.

We are going forward with work on an application to the FCC for authorization to provide such a service.

Closer at hand is our entry into the domestic business communications field. SBS, our partnership with IBM and Aetna, is on the threshold of putting its initial operational system into service to provide advanced integrated voice, data and image communications. The first of the SBS satellites is scheduled for launch in October, and a second satellite is slated to go up in the spring of 1981. SBS intends to begin operations early next year.

The SBS satellites will operate in the 12- and 14-gigahertz frequency bands to avoid spectrum interference with terrestrial communications that use lower frequencies. Small antennas and communications processing equipment will be installed on customers' premises.

SBS will introduce a combination of innovations that are unmatched to date. These include an all-digital technique that permits combined transmission of voice, data, and image communications, including video teleconferencing, in a single network.

SBS will provide dedicated, private-network communications for large organizations that have multiple, dispersed facilities. Contractual arrangements for services have been negotiated with the first set of customers.

For those organizations that do not have communications volumes large enough to justify dedicated facilities, SBS intends to establish earth stations for use by more than one customer. In this manner, medium-sized users can have available, on a cost-effective basis, the SBS services and applications they desire.

An additional SBS service would enable customers to communicate with other parties in a service similar to the wide-area telephone service known as WATS.

The FCC authorization to SBS to provide such services was questioned in the courts by a number of entities. We are pleased with the recent U.S. Court of Appeals decision upholding the FCC's authorization of the SBS system. We are optimistic that this ends the judicial challenges and that SBS can proceed without further legal obstacles.

The SBS partners have made commitments of funds totaling $375 million, of which COMSAT GENERAL's share is $125 million. As we have reported in the past, additional funds will be required from the partners as SBS moves toward full commercial operation. The high level of this up-front investment attests to our belief that the longer term outlook for this ambitious program is very bright indeed.

Our industry is on the verge of great changes and explosive growth. It is anticipated that government regulation increasingly will give way to the forces of the marketplace and that new technologies will vie with one another to meet an ever-growing demand for better business communications and improved home entertainment and information services. In this changing environment, we foresee a major role for satellite communications and substantial opportunities for the Corporation.

As we move to apply our unique skills and resources to new activities, our investment in these programs during their start-up phases could be substantial. Only through a full commitment to projects that have long-term growth potential will we ensure that the Corporation remains healthy and vigorous in the years ahead.

NEWS

Bodman election part of effort to boost COMSAT GENERAL

Several organizational changes designed to strengthen the competitive position and management of COMSAT's wholly owned subsidiary, COMSAT GENERAL Corporation, have been put into effect.

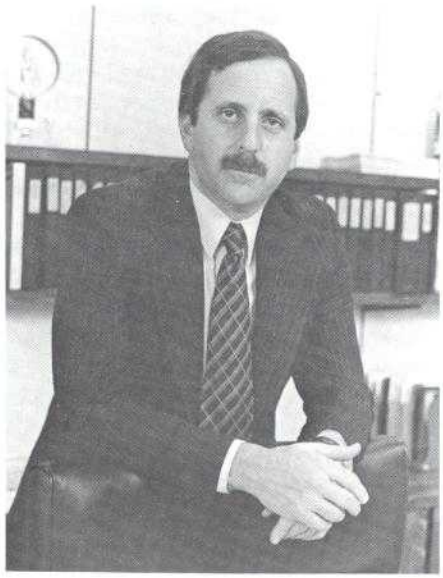
The COMSAT GENERAL Board of Directors has elected Richard S. Bodman, President and Chief Operating Officer of COMSAT GENERAL; Joseph H. O'Connor, Executive Vice President; and Michael S. Alpert, Vice President, Planning and New Ventures. All except Mr. O'Connor were previously officers of the parent company.

"These management changes will enable COMSAT GENERAL more actively to pursue and develop new business ventures," Dr. Joseph V. Charyk, President and Chief Executive Officer of COMSAT, and John A. Johnson, COMSAT GENERAL's Chairman and Chief Executive Officer, said in a joint statement. "These changes are also consistent with organizational principles proposed by the Federal Communications Commission in its recent study of COMSAT," they added.

Mr. Bodman, 42, the newly elected President and Chief Operating Officer of COMSAT GENERAL, had been Senior Vice President, Finance and Corporate Development, of COMSAT since January 1978. Before that he held executive positions with E. I. duPont de Nemours & Company.

Mr. O'Connor, 61, had been COMSAT GENERAL's Senior Vice President, Finance and Administration, and Treasurer. As Executive Vice President, he will have overall responsibility for finance and administration as well as major systems investments such as COMSAT GENERAL's partnership interest in SBS.

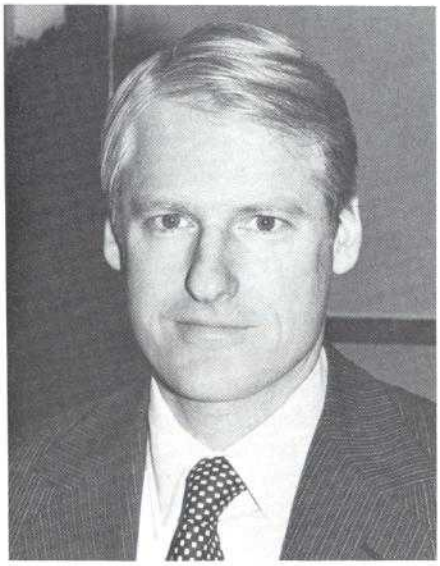
Joseph H. O'Connor is Executive Vice President, COMSAT General Corporation.



Michael S. Alpert is Vice President, Planning and New Ventures, COMSAT General Corporation.

Mr. Alpert, 39, had served since May 1978 as COMSAT's Assistant Vice President, Corporate Development. Before joining COMSAT in 1974, Mr. Alpert was Director of Corporate Development for Pan American World Airways.

With Mr. Bodman's move from COMSAT to COMSAT GENERAL, Carl Reber, COMSAT's Vice President,



Richard S. Bodman is President and Chief Operating Officer, COMSAT General Corporation.

Carl Reber, COMSAT's Vice President, Finance, adds the title Chief Financial Officer.

Finance, becomes COMSAT's Chief Financial Officer.

In the FCC study mentioned by Dr. Charyk and Mr. Johnson, the FCC concluded that COMSAT should not be foreclosed from applying its technology and expertise to the development of lines of business in addition to its INTELSAT and INMARSAT activities, but that COMSAT should be required to maintain its INTELSAT and INMARSAT related functions in one corporate organization and its other business activities in another.

* * *

Arthur E. Parsons is Assistant Vice President, Marketing, COMSAT General Corporation.

The Board of Directors of COMSAT GENERAL Corporation has elected Arthur E. Parsons to the position of Assistant Vice President, Marketing.

Mr. Parsons joined COMSAT GENERAL in May 1977 as Director of Government Marketing and during his three years has served in the position of Director of Marketing, with his most recent position being Division Director, Marketing.

Mr. Parsons has held several senior marketing positions in the telecommunications industries including that of Vice President of Marketing and Executive Vice President of TRT Telecommunications, Inc.

Reporting to Mr. Parsons will be Mr. Don W. Flora, Division Director, Marketing, and Mr. Herbert L. Bradley, Division Director, Program Development.

For the past two years, Mr. Flora has been under contract to COMSAT GENERAL as a consultant in the areas of DOD and International Marketing. Mr. Flora comes to COMSAT GENERAL with extensive experience in the satellite telecommunications industries, having held several senior marketing positions with Ford Aerospace and NEC America, Inc.

Reporting to Mr. Flora will be Mr. Vern Stelter, Director of Government Marketing, and Mr. John Perkins, Director of International Marketing.

Mr. Bradley joined COMSAT GENERAL over 18 months ago after having spent 15 years with GTE. During his stay with GTE, Mr. Bradley held several marketing and business development posts and was director of its Korean subsidiary.

Reporting to Mr. Bradley will be Mr. Hale Montgomery, Director, Market Development, and the director of Systems Applications and Proposal Management, a position that has not as yet been filled.

* * *

Roy A. Greene has been appointed to the position of Division Director, Personnel, for COMSAT GENERAL Corporation reporting to Joseph H. O'Connor, Executive Vice President. Mr. Greene will be responsible for coordinating all personnel and employee relations activities within COMSAT GENERAL.

Prior to joining COMSAT in 1978 as Director of Corporate Personnel, Mr. Greene was with Honeywell, Inc., for seventeen years, serving last as Director, Employee and Community Relations for the Information Systems-Federal Systems Operations Division.

ICA Conference has COMSAT booth

COMSAT's International Communications participated recently in the 33rd Annual International Communications Association Conference and Exposition held May 12-15 in Cobo Hall in Detroit.

The conference opened with a keynote address given by Charles L. Brown, Chairman of AT&T. Speakers during the four-day conference included Henry Geller, Assistant Secretary of Commerce, Dr. Lewis M. Branscomb, Vice President and Chief Scientist of IBM and Dr. S. J. Buchsbaum, Executive Vice President of Bell Telephone Laboratories. The closing luncheon was addressed by Rep. Lionel Van Deerlin (D. Calif.), Chairman of the House Commerce Communications Subcommittee.

Sessions during the ICA Conference covered topics ranging from regulatory issues to the development of the telecommunications management profession and technology of the 1980s.

This year's exposition represented a 40-percent increase in exhibiting companies in comparison to last year's show, with over 1,100 ICA members and 2,000 guests in attendance. Other companies exhibiting included Nippon Electric Corporation, AT&T, MCI, Western Union International, American Satellite and COMSAT GENERAL. The COMSAT exhibit illustrated many of the international satellite services to be offered by COMSAT through the INTELSAT V and the advantages to large communications users of having a Torus Antenna co-located at COMSAT's international gateway earth stations.

The exhibit was staffed by David Gourley, Director, Sales and Market Development, William Simms, Assistant Director of Sales and Business Development, Stephen Crall, Market Analyst and Kathryn Young of Public Affairs. **—Kathryn Young**

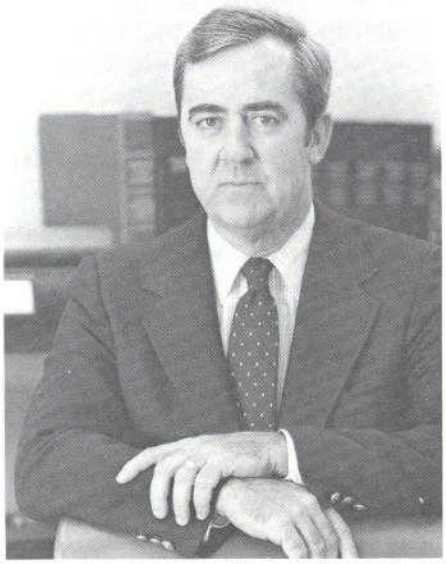
(More "News" on next page.)

NEWS

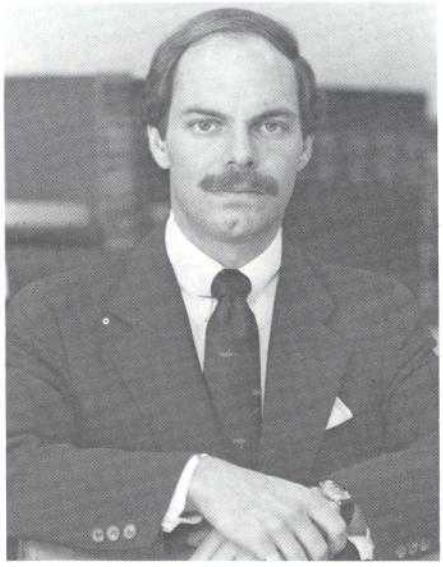
COMSAT GENERAL Chairman John A. Johnson is President of Satellite Television Corporation.

"COMSAT GENERAL is committed to the concept of a direct broadcast service."

John A. Johnson



Leo M. Keane



George H. Billings

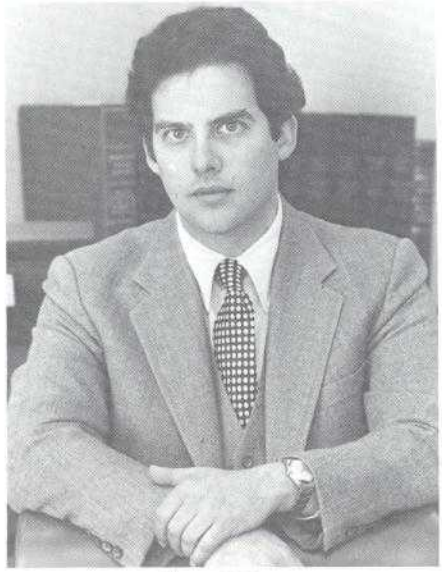
Judith S. Elnicki

Satellite Television Corporation will offer multiple channel television service

COMSAT General Corporation has announced formation of a subsidiary, Satellite Television Corporation, as its vehicle to pursue the development and offering of a satellite-to-home subscription television service. The proposed service would offer multiple channels of entertainment and information to U.S. consumers for a monthly subscription fee, and would supplement existing commercial television service available to American viewers. (See related story on the facing page.)

"COMSAT GENERAL is committed to the concept of a direct broadcast service," said John A. Johnson, Chairman and Chief Executive Officer of COMSAT GENERAL and President of the new corporation. "We are convinced that this service will help meet growing consumer demand for diverse home entertainment and information."

Assisting Mr. Johnson in the new subsidiary will be the following: George H. Billings, Vice President, Business Development; Judith S. Elnicki, Vice President, Public Affairs; Leo M. Keane, Vice President, Engineering; and Warren Y. Zeger, Vice President and General Counsel.



Warren Y. Zeger

COMSAT GENERAL has been engaged in discussions with other companies about a possible joint venture to provide the service. Mr. Johnson said the company will continue to seek a joint venture arrangement.

(More "News" on Inside Back Cover)

A large audience at National Cable Television Association meeting in Dallas listens to Michael S. Alpert.

Alpert outlines Corporation's proposed satellite TV services at convention

"In what may be our most innovative and far-reaching program, we propose to bring COMSAT to the consumer market," said COMSAT GENERAL Vice President Michael S. Alpert in his remarks at the May 18-21 meeting of the National Cable Television Association in Dallas, Texas.

Mr. Alpert, who had managed the original COMSAT project team developing the service concept, appeared at the NCTA convention to describe the proposed service and its impact on the cable television industry.

"Our direct-to-the-home broadcasting service will be premium pay TV service. Multiple channels of programming will be beamed from a satellite directly to small rooftop antennas at subscribers' homes. Supported by monthly subscription revenues," said Mr. Alpert, "the service will carry no commercials."

To provide this broadcast service, high-powered satellites would be launched. A fully-developed system would include operating and in-orbit spare satellites which could offer at least two channels across the country, and up to two additional channels in selected regions covered by spot beams.

Satellites operating at super-high 12 GHz frequencies will permit use of home receivers with dish antennas less than a meter in diameter.

Mr. Alpert told the NCTA members that the signal will be scrambled, and subscribers will be equipped with a decoder in addition to the dish antenna and related electronics. "We think subscribers should have the option to lease or buy the home equipment," he stated.

Current plans for the home equipment contemplate use of an addressable decoder. With this approach, individual subscribers would be turned on according to their service selection. And non-paying customers could be turned off, he said.

COMSAT GENERAL studies indicate the development of the satellites and mass production of the home equipment are technically achievable—at affordable costs, Mr. Alpert told the NCTA audience.

"Our studies also show that at least 15 similar direct broadcast systems are technically possible in North America. In terms of available spectrum and orbital arc, we are dealing with an environment of abundance, not scarcity," he explained.

(Continued on next page)

Alpert discussing COMSAT's proposed satellite TV service. At right is FCC Commissioner James Quello.

ALPERT

(Continued from page 13)

"We intend to offer high-quality, distinctive and diverse programming," he said. "We believe this multi-channel service will stimulate new programming sources and holds great promise for increasing the quality, quantity and diversity of programming."

Program offerings would include:

- General entertainment—movies and sports,
- Family entertainment, including children's programming and cultural programs,
- Educational and informational programs,
- Special-interest programming, including minority-oriented programs.

"We see a large role for special-interest programming," Mr. Alpert continued, "because of the unique capability of the satellite service to accumulate small, scattered audiences into one large, national audience. This concept of 'narrowcasting' is dependent on the integrated, multi-channel capability of the service we propose."

Other service possibilities include stereo sound or a second-language audio track. Also under consideration are a developmental teletext service, closed captioning for the hearing-impaired and an experimental high-resolution picture service.

Mr. Alpert described current plans for the immediate future, noting the termination of discussions between COMSAT GENERAL and Sears. "Since then," he said, "we have moved on to discussions with other companies having strengths that complement our own. Meanwhile, COMSAT has pushed ahead with work on an FCC application."

Mr. Alpert stated the intention to file for broadcast status. "We'll seek expeditious processing of our application by the FCC. There is a lead time of several years for constructing the satellites, so our target date for commencing operations is in the 1984 time-frame."

NCTA members, as well as broadcasters, have questioned the impact of satellite subscription TV on conventional and cable TV.

"In some broadcast circles," said Mr. Alpert, "the alarm has been sounded." The cable industry, on the other hand, "remembers [its] own battles and declined to seek government protection from a new video technology.

"Those who fear the advent of our service don't understand the market we propose to serve," said Mr. Alpert. "Our projected market penetration is insignificant compared to the television networks' share. According to a study we have commissioned, our calculated market penetration would have to increase many times over—well beyond our reach—for us to generate any adverse economic impact on TV that could even be termed significant."

As to the impact on cable, he said that the proposed service will not adversely impact on cable. "Cable will offer more channels and more programming service than we will—with picture quality and price competitive with our service. We will compete by offering programming services differentiated from those on cable, but I would be less than frank if I did not say that we see our most significant market opportunity as lying in non-wired areas," he said. "We propose to be a source of paying programming that should be of considerable interest to cable operators.

"The time is right for a satellite subscription television venture. Consumers have clearly demonstrated their demand for diverse video services," Mr. Alpert said. The technology is within reach, and COMSAT believes the regulatory environment supports such innovative programs, he noted. "We hope the FCC will recognize the significant public benefits of our proposed system and will grant us an expeditious approval."

Pago Pago earth station receiving good marks

BY STEVE CRALL

Sales and Market Development of International Communications recently asked the people of American Samoa to rate the new satellite service being provided through COMSAT's new Pago Pago earth station. Results of the survey were extremely favorable. The Pago Pago earth station began operations in October 1979, linking American Samoa to the U.S. mainland, Hawaii and Guam, via INTELSAT's Pacific satellite.

The survey was designed to determine the reaction of users in American Samoa to the new service and to assess whether satellite services are considered an improvement over the previous system, and if the new services are satisfactorily meeting the communications needs which they were designed to fulfill.

Prior to satellite service, communications between American Samoa and distant points was provided over high frequency radio circuits. COMSAT leases satellite circuits to the Government of American Samoa, the communications carrier in American Samoa. These circuits provide message telephone, telex, telegraph, and data services.

A questionnaire was mailed to 200 potential respondents: 122 private individuals, and 78 representatives of government and the business community. The survey questions focused on the following areas:

—quality of new service (vis-a-vis HF system),

—interest in new additional services such as television and facsimile,

Mr. Crall is a Market Analyst, Sales and Market Development Department, International Communications.

COMSAT Questionnaire on
American Samoa Satellite Services

		BASIC RESULTS NUMBER OF RESPONSES	%
1.	How often do you telephone points beyond American Samoa?		
	a. Less than once a month	12	16
	b. Once or twice a month	11	15
	c. Three or more times a month	52	69
	TOTAL	75	100
2.	How does the quality of the satellite circuit compare to the previous HF radio circuit?		
	a. Much better	61	81
	b. Better	11	15
	c. About the same	2	3
	d. Not as good	1	1
	TOTAL	75	100
3.	Are your calls primarily for		
	a. Business	21	28
	b. Personal	16	21
	c. Both	38	51
	TOTAL	75	100
4.	Since satellite service was introduced, are you making		
	a. More telephone calls	49	65
	b. Fewer telephone calls	2	3
	c. About the same number of calls	24	32
	TOTAL	75	100
5.	Since satellite service was introduced, are you using		
	a. More telex/telegram service	6	9
	b. Less telex/telegram service	21	30
	c. About the same	43	61
	TOTAL	70	100
6.	What new or additional services would you like to have in American Samoa?		
	a. Data service	13	14
	b. Facsimile service	7	8
	c. International television	70	78
	(If yes, what type?) News 14	TOTAL 90	100
	Sports 6		
	Special events 10		
	All of the above 50		
	d. Other		

Any comments or suggestions about the satellite services would be appreciated. Thank you for your time and help.

—frequency of long distance calls,
—telex/telegram usage since satellite service began.

The questionnaires were mailed at the beginning of April 1980; 75 responses have been received, for a response rate of 38 percent, which is very high for a survey of this type. (See the questionnaire example with results tabulated above.)

From any perspective, the responses were very positive, as suggested by these facts:

—81 percent of all respondents rated the quality of the new service as "much better" than the previous system.
—An additional 15 percent rated the new service as "better;" thus, 96 percent of those responding consider satellite service as a definite qualitative improvement.
—3 percent of those responding rated the service as "about the same," while one of the respondents indicated the service was "not as good."
—69 percent of those rating the new service as "much better" make the greatest number of long distance calls (three or more calls a month) and are presumably in a better position to judge the quality of the new service.
—A very high percentage of the business community gave the new satellite service the highest quality rating.
—65 percent of all respondents are making more long distance calls since the new service was introduced.
—All respondents asked for additional services, especially television coverage of news, sports and special events.
—The write-in comments were generally very positive, describing the service as "a great step forward," and "superb."

COMSAT to plan Australian system

COMSAT has been chosen by Australia to help that country establish its own domestic satellite communications system.

The new satellite system planned by Australia is primarily to provide direct satellite to home television and radio services, and a separate telephone service to farms in the remote parts of Australia. In addition, it will provide improved distribution of network and community television programs to the major populated areas around the rim of Australia.

The first phase of COMSAT's work, valued at approximately $200,000, will be with the Space Satellite Planning and Development Group of the Australian Postal and Telecommunications Department and will involve assisting in the preparation of requests for proposals to purchase spacecraft, earth stations and tracking and monitoring equipment.

Comsat hosts latest session of Council

The opening of the fourth INMARSAT Council session in the INTELSAT Board of Governors room.

BLACK AND WHITE PHOTOS BY BILL MEGNA

By Elizabeth Schulke

Comsat, as the U.S. Signatory to Inmarsat, hosted the fourth Inmarsat Council session in Washington, D.C. from May 7 through 14, 1980. Sixty representatives from 26 member countries attended the meeting. The most important items discussed during the session were:

Space Segment Matters

A request for proposals (RFP) for lease of space segment capacity was issued worldwide by Inmarsat on March 12, 1980. Proposals were received from Comsat General, Intelsat and the European Space Agency (ESA) by the May 2 deadline. Comsat General, on behalf of the Marisat Joint Venture, proposed to lease capacity for a limited period of time in the Pacific Ocean region. Intelsat offered capacity in the Indian and Atlantic Ocean regions, and ESA proposed to lease capacity in the Indian and Pacific Ocean regions through its MARECS A and B satellites.

These proposals will be evaluated between now and the July session and a decision in principle on the final configuration of space segment facilities will be taken at that session. Approval of the contractual arrangements will take place at or before the November session of the Council.

Directorate Matters

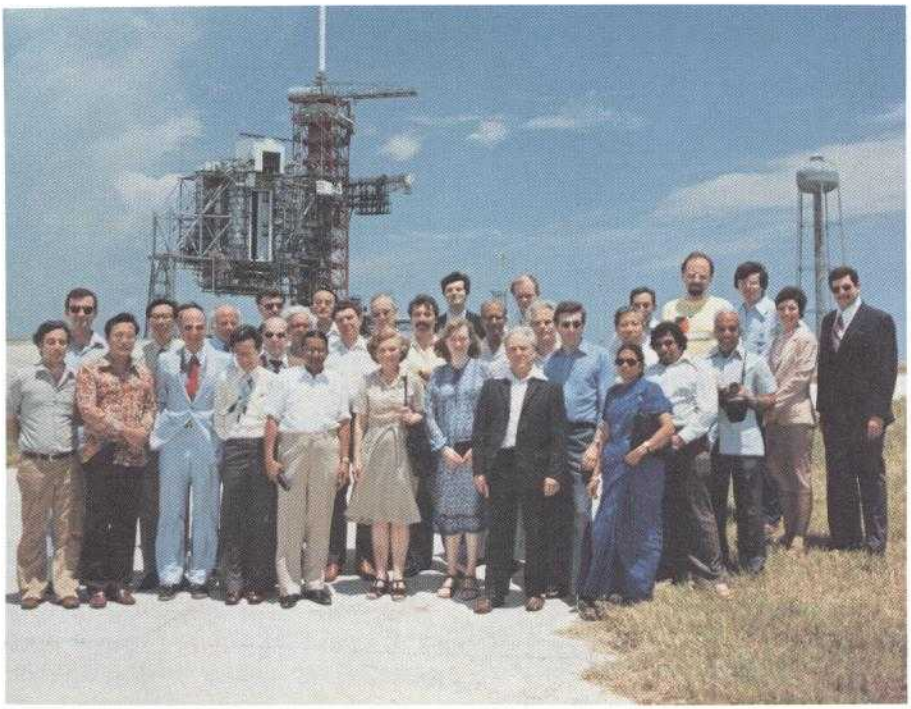
The Director General presented several proposed modifications of the terms and conditions of employment for the Directorate staff. Based on the report from a working group established to review the proposed modifications, the Council decided to retain the basic salary structure adopted at its third session and approved for non-resident staff a 10 percent allowance of basic salary and a provisional 20 percent cost of living allowance. The Council also approved a revised education allowance for non-resident staff and their dependents and requested further

Ms. Schulke is with the INMARSAT Division of the Corporation.

At break in Council session, Pierre Godiniaux of France talks with S. Sreenivasachar of India.

Director General of INMARSAT Olof Lundberg chats with Dr. John McLucas, COMSAT Executive Vice President.

Dr. Joseph V. Charyk, COMSAT President and Chief Executive Officer, with Y. Atserov of the U.S.S.R.



Many of the participants in the Council session concluded their visit to the United States with a tour of Kennedy Space Center facilities in Florida.

information from the Director General in connection with the previously approved housing allowance.

Network Coordination Services

Network coordination services will be required when two or more coast stations are operating with the INMARSAT system. Pursuant to a decision taken by the Council at its third session, the Director General presented a draft RFP for procurement of network coordination services.

The Council also authorized the Director General to procure technical assistance in advance of the Advisory Committee sessions in June to examine the possibility of an interim access system which would accommodate more than one coast earth station per ocean region and be capable of implementation on a shorter schedule than the full network coordination service. The Council decided that the RFP should be limited to obtaining services from a single earth station in each ocean region and approved the following schedule for the procurement: issuance of the RFP to INMARSAT Signatories on May 27, 1980, with responses due by August 1, 1980; contracts to be awarded in mid-November 1980, and commencement of services by mid-March 1982.

Earth Station Standards

The Council approved the first set of standards for the INMARSAT system by adopting technical requirements for coast earth stations that will operate with the system. These standards are based largely on similar standards established for the MARISAT system.

The Advisory Committee on Technical and Operational Matters is currently developing standards with respect to ships' earth stations, and will recommend a standards document for consideration by the Council at a later date.

At the break, from left, L. S. Dooley, Australia; R. Christoffersen, Australia; Dr. Charyk; A.R.K. Al-Ghunaim, Kuwait; L.F.T. Perrone, Brazil; V.R.Y. Winkelman, Netherlands.

Also photographed at the break: E. A. Gabelloni of Argentina talking with N. A. Al-Nakib of Kuwait.

looking at ERT

ERT scientists solve mystery of Denver's 'brown cloud'

BY DALLAS GALE

SCIENTISTS FROM ERT played a major role in a recent study to determine the nature of the Denver "brown cloud." Dr. Steven Heisler directed the ERT portion of the cooperative effort sponsored by the Motor Vehicle Manufacturers Association of America (MVMA).

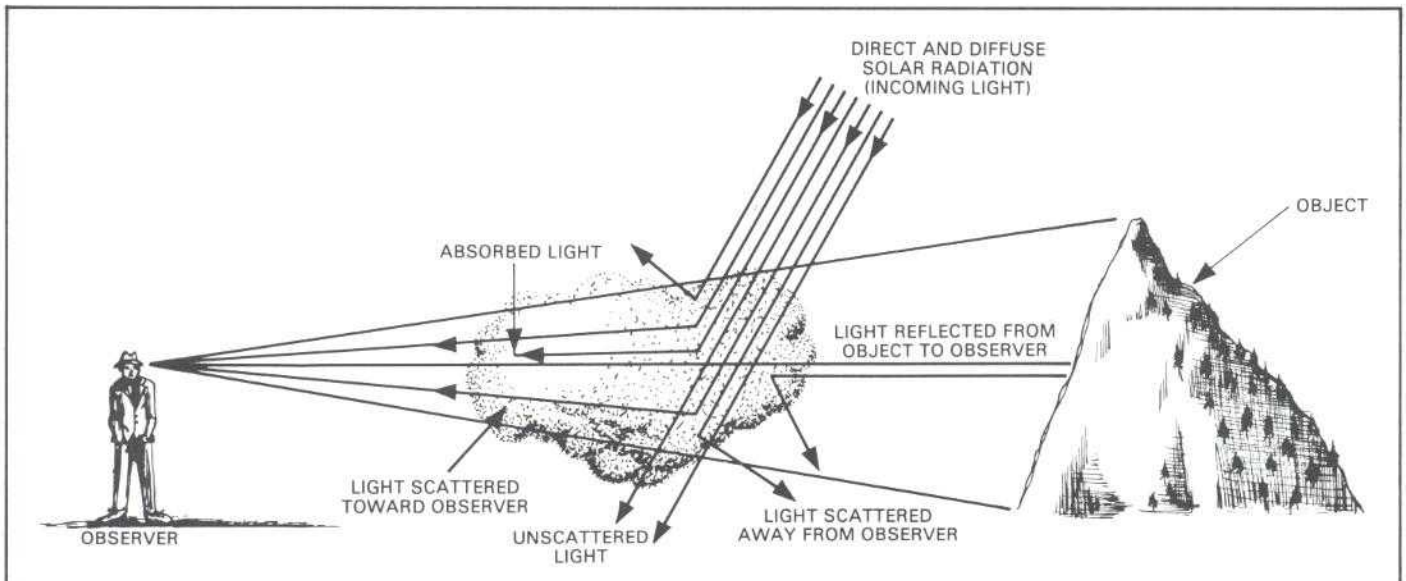
Accustomed to wide vistas and magnificent views of the Rockies, Denver residents have been concerned about the progressive reduction in visibility caused by the white to grey-brown winter haze. To meet increasing speculation that motor vehicle exhaust and road dust were the main, perhaps only, causes of the haze, the MVMA began a study in 1978 which has produced one of the most comprehensive data sets of its kind on urban air pollution yet available. It contains information on the optical properties of haze in addition to air quality and meteorological factors.

The MVMA study was designed to determine the temporal and spatial nature of the haze, the physical and chemical character of the airborne particles or aerosol, the pollutants causing the haze and the sources of these pollutants.

A significant new finding of the study is the important contribution (39%) of elemental carbon particles to the reduction of visibility and the appearance of the haze. Although the origins of these carbon particles are not completely known, the largest identified contributors of elemental carbon are diesel emissions and natural gas combustion. (Natural gas is the major home heating fuel used in the Denver area.)

By both scattering and absorbing light, elemental carbon particles were a major contributor to the appearance of the cloud. Absorption of light by nitrogen dioxide (NO_2), particularly at wavelengths in the "blue" part of the spectrum, added to obscured vision and contributed to discoloration of the haze on occasion. Measurements of light from the haze indicated little or no coloration, even though observers

Ms. Gale is Staff Assistant for Communications to Dr. Norman Gaut, ERT President.



LIGHT SCATTERING AND ABSORPTION IN THE ATMOSPHERE

On a clear day, the distant Rockies are visible. But pollution scatters light, obscuring the view.

perceived the cloud as varying from white to brownish-grey.

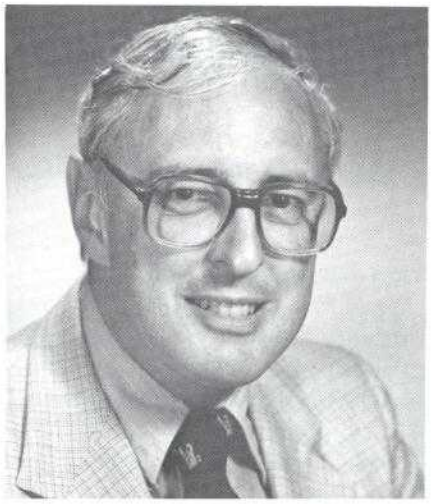
Although coarse particles from soil and road dust were present, the fine particulate matter was found to be the controlling factor in the appearance of the haze. Less than 2.5 microns in diameter, these particles were made up of organics (18–35%), elemental carbon (9–17%), sulfate (8–19%), nitrate (6–14%), and crustal-like material (7–17%).

Other components of the cloud were similar to those found in most urban areas and did not greatly influence the appearance of the haze. Winter weather conditions localized and stabilized the haze by trapping air in the South Platte River Basin.

Dr. George Wolff of General Motors Research Laboratories worked with Dr. Heisler to direct the study. It involved cooperative efforts of technical staff from GM Research Labs, ERT, the Colorado Department of Health, consultant Loren Crow, Meteorology Research, Inc., the National Oceanic and Atmospheric Administration's Boulder Laboratories, the University of Washington, NEA Laboratories, Rockwell International Corporation, and Dr. John Hall, formerly with Lowell Observatory.

Dr. George Hidy, Dr. Ronald Henry, and Dr. John Watson also participated in the study, assisted by ERT Environmental Chemistry Center staff members, Mr. John Collins, Ms. Dolores Youtz, Ms. Donna O'Toole, Dr. Kochy Fung, Dr. Karen Warren, Mr. Jeffrey Harrison, and Ms. Virginia Day.

Artwork by Victor Rachootin and Linda Blacksmith of the ERT Publications Department.



Dr. W. Leigh Short

Dr. Short named new engineering director

W. Leigh Short is the new Director of the ERT Environmental Engineering Group. In his new position Dr. Short will direct all process, environmental, and waste water engineering activities undertaken for ERT clients.

From the ERT Houston office where he has been manager of the engineering division servicing the petroleum and petrochemical industries, he will oversee the rapid growth expected in this area of ERT business in the next few years.

Before joining ERT, Dr. Short was Professor and Head of the Chemical Engineering Department of the University of Massachusetts at Amherst. He has also worked with the Environmental Protection Agency, major chemical firms, and large consulting houses through KSE, Inc., a private consulting corporation in which he was a partner.

Educated at the University of Alberta, Canada, and the University of Michigan, Dr. Short is a member of the Technology Assessment and Pollution Control Advisory Committee, EPA's Science Advisory Board, and the SO_x and NO_x Control Technology Committee of the National Academy of Sciences.

ERT papers spark weather conference

ERT air quality scientists were major contributors to a conference sponsored by the American Meteorological Society and the Air Pollution Control Association in New Orleans.

Underscoring the crucial role of weather conditions in dispersing or concentrating polluting emissions, this second joint meeting on the Application of Air Pollution Meteorology was attended by over 300 scientists March 24–27, 1980.

Dr. Bruce Egan, ERT Vice President and Manager of the ERT Air Quality Center, assisted in developing the conference program and served as Chairman of the session on complex terrain modeling.

ERT was commended by many for its series of nine concise, well-documented papers and the excellent graphics which accompanied the presentations. Topics offered by the eighteen ERT authors centered on mathematical models developed by ERT to predict emissions and emission dispersal under a variety of circumstances.

Preparation for ERT participation in the Air Pollution Control Association Annual Meeting in Montreal June 22–27, 1980, is nearing completion. Attended by more than 5000 air quality scientists, meteorologists, and industry representatives, this meeting provides ERT with a major opportunity for reaching potential clients. The ERT effort is directed by Gale Hoffnagle, Member of the APCA Board of Directors and Manager for Air Quality Center Business Development at ERT, and Louise Balwit, Manager of ERT Promotion.

An antenna-raising

Etam Earth Station has a new antenna, the 14/11 GHz

The 62-foot diameter dish rests on an area of lawn where it was constructed. A short time later, the 120-ton crane began the lift.

EVERYONE HAS HEARD of a barn raising, but unless you're in the communications satellite business you aren't likely to have heard of an antenna raising. But an antenna raising is exactly what did take place in mid May in rural West Virginia, and the event was marked by some of the same spirit associated with the traditional barn raising.

What happened was the raising of the 62-foot (diameter) dish of the new 14/11-gigahertz antenna atop its alidade and pedestal at the Etam Earth Station. Etam will be the first earth station in the Western Hemisphere in the INTELSAT system with a 14/11-gigahertz Standard C antenna, and its completion is one more step in ushering in the INTELSAT V era.

Once the first of the INTELSAT V satellites is launched, has reached its station and is functioning, it will be operating not just in the four- and six-gigahertz frequencies that are standard for the INTELSAT system, but in the higher frequencies of 14 and 11 gigahertz as well. In order to take advantage of the new 14/11 capability, the system needs antennas dedicated to working at those frequencies, and now it has one of the first of the new breed in the form of the new antenna at Etam.

(Operation in the 14/11 GHz frequencies is not the only way that the INTELSAT V satellites achieve increased capacity over earlier satellite series. The INTELSAT V also introduces polarized transmissions into the system. Overlaid on the satellites' global beam transmissions will be two circularly polarized transmissions beamed into separate hemispheres. Overlaid upon each of these, using the same frequencies but polarized in the opposite directions (orthogonal to the hemisphere transmissions), will be two zonal beam transmissions. All of these beams will operate using and reusing the frequencies in the 6/4 GHz band. In all, the 6/4 GHz frequencies are used four times.)

The antenna was erected over a period of three months under the direction of the Corporation's Earth Station Engineering Division. Initially, the concrete pedestal, in which the antenna's beam wave-guide feed and other equipment are housed, was constructed. Next came the fabrication of the metal alidade which fits on top of the pedestal. The fabrication of the 62-foot dish occurred on a nearby lawn. The dish, which weighs about 30 tons, was then lifted into place by a 120-ton hydraulic crane and joined to the alidade structure.

Once in place, a notched-out section of the dish was completed. (The notch is necessary to permit the crane boom to achieve a closer-to-vertical position during the lifting operation than would otherwise be possible.) The quadripod structure containing the sub-reflector was then set in place in the dish.

Workers use rope to steady the load as dish rises into the air.

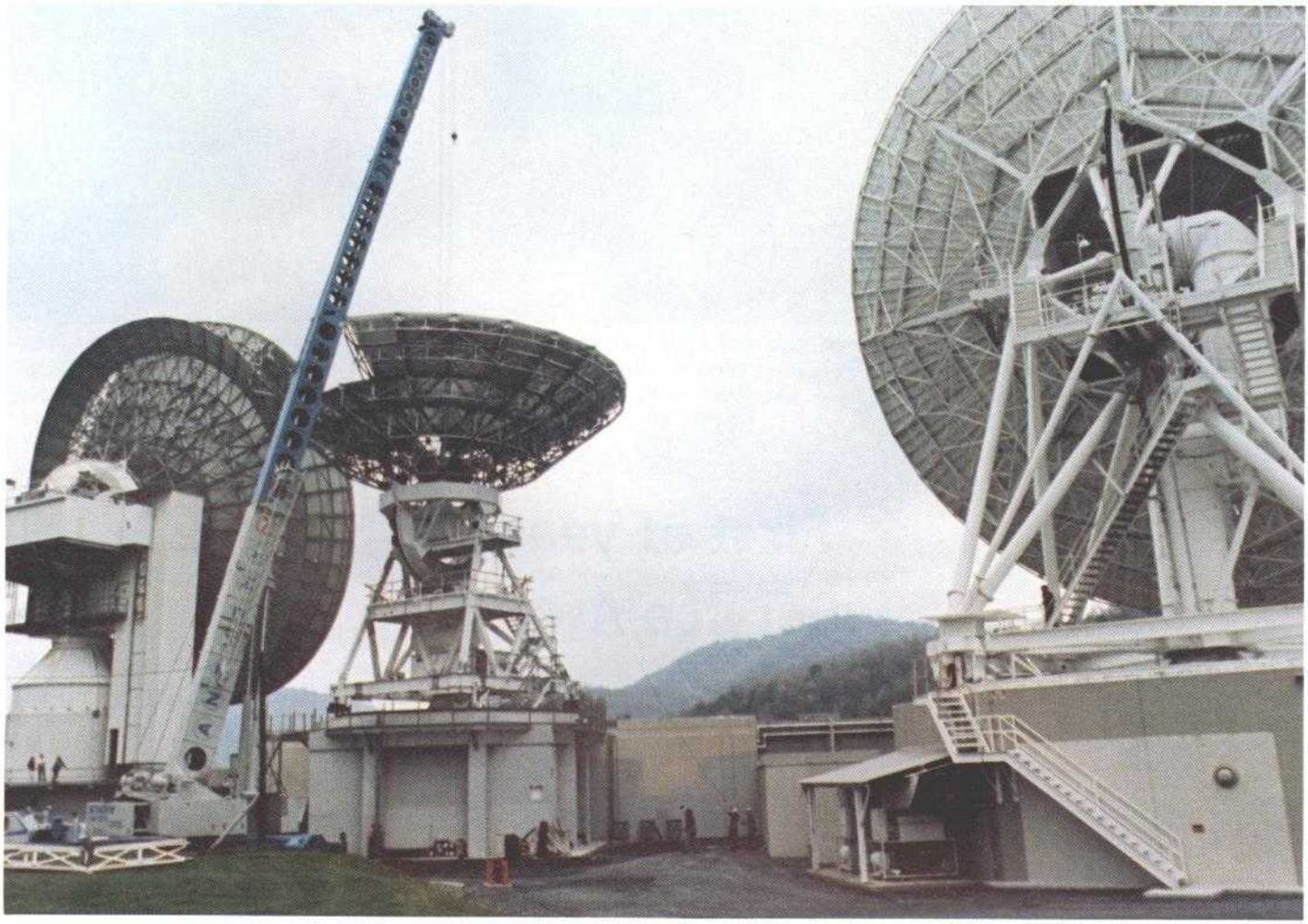
PHOTOS BY BILL MEGNA

TIW Systems of Sunnyvale, California, was the Corporation's contractor on the project. Metal fabrication took place at the TIW facility in Trenton, Canada.

Technical supervision of the project at COMSAT is being handled for International Communication's Project Management Office by Lewis V. Smith, Manager of the Antenna and Facilities Department of the Earth Station Engineering Division. He is being assisted by Thomas M. (Tam) Stuart, Task Manager for Antennas, and Elias Perez, Task Manager for Facilities, and staff reporting to them.

in rural West Virginia

Standard C, for operation with the INTELSAT V series of satellites



Dish reaches its final position atop alidade and concrete pedestal. Flanking new Standard C antenna are Etam's two Standard A antennas.

Once dish was in place, the quadripod structure was lifted from the ground and set inside it. Here a worker prepares to attach crane hook to the top of quadripod.

Employees cited for more than 15 years of service, from left: Louis B. Early, William L. Callaway, James B. Potts, John A. Johnson, and Dr. Joseph V. Charyk.

Cited for 15 years of service in 1979, from left: Carl Reber, Hans J. Weiss, Lawrence Devore, Richard Smith, Laurence F. Gray, William D. Young, Dr. Joseph V. Charyk (presenter), Al R. Coburn, Edward Martin, Pat Kiernan, Gene E. Christensen, William H. Berman, Richard L. Hammerly, and Alexander Yenyo.

First of yearly Service Award Receptions held

The Corporation's first Service Award Reception was held in the Early Bird Room at L'Enfant Plaza Headquarters on April 24, and about 100 COMSAT employees who had completed 10, 15 or more years

Recognized for 15 years of service in 1980, from left: George Lawler, Arnold Myers, Nathan Tonelson, Hale Montgomery, Robert C. George, M. Carol Smith, and Dr. Joseph V. Charyk (presenter).

Ten-year anniversary in 1980, from left: Bob Drill, Carolyn Dredge, Albert J. Eaton, Francoise Crepeau, Dr. Joseph V. Charyk (presenter), Harriet R. G. Biddle, Eli Wachsberg, Herbert A. Hanson, and Victor J. Slabinski.

Saluted for 10 years of service in 1979, from left: Granville L. Albright, Bernard Schmell, George H. Robertson, Albert Mark, Kenneth Morimoto, Pierce C. Stine, Henry L. Parker, George H. Wooton-Woolley, Darleen Jones, Raymond L. Joyner, Wayne W. Moore, Audrey L. Rudd, Edith Ford, Dr. Joseph V. Charyk (presenter), Samuel K. Jones, Marion Timmons, Richard Arndt, William H. Connor, William H. Hutchens, Gordon Bush, Rockwood E. Lee, Donald J. Chontas, Herbert Hanson, and Richard J. Porter.

of service by April were honored at that time as the photographs on this and the following page depict.

The reception, now scheduled as an annual event, included speeches by Dr. Joseph V. Charyk, President and Chief Executive Officer, and David S. Nye, Assistant Vice President, Personnel, a buffet dinner, and a reading of the names of the award recipients in attendance.

PHOTOS BY BILL MEGNA

Also celebrating 10 years of service in 1979, from left: Paul Rankin, Ron Kos, A. C. Walle, Al Eaton, Ali E. Atia, Betty Linthicum, James Allison, Daniel DiFonzo, Edmund S. Rittner, Melvyn Grossman, Allanina G. Cramer, Bernard Free, Dr. Joseph V. Charyk (presenter), William J. Getsinger, Gary Gordon, Barbara Hutchens, Francois T. Assal, Martha C. Shirley, George Szarbas, Claudette Tucker, Charles Dahl, Thomas D. Kirkendall, Dirk M. Van Der Loo, Jo Ann Wagner, Allen F. Flower, John W. Ehrmann, and Victor Slabinski.

PEOPLE AND EVENTS

Another member of Bob Drill family wins Merit Scholarship

For the second time in the history of the Merit Scholarship Program at COMSAT, a member of the family of Bob Drill has won the four-year COMSAT Merit Scholarship Award. Winner of the 1980 award is Laura G. Drill, Bob's daughter. The winner of the 1974 COMSAT Merit Scholarship Award was Steven C. Drill, Bob's son.

Bob Drill is Service and Traffic Analyst with COMSAT GENERAL and is based at L'Enfant Plaza.

Laura Drill, a graduate of Herndon High School, Fairfax County, Virginia, will be attending Virginia Polytechnic Institute, Blacksburg, Virginia, in the fall and expects to major in Animal Science. Another interest of hers, which she will be pursuing in college, is music. She both sings and plays the guitar.

The Merit Scholarship Program at COMSAT started in 1966, and there has been a scholarship winner each year since then except in 1968. The winner of the COMSAT Merit Scholarship Award is chosen each year by the National Merit Scholarship Corporation in accordance with standards and selection procedures established by it. COMSAT has nothing to do with the selection process.

Bob Drill, who has four children in all, still has another daughter at home who is not yet of college age. Is it possible that we will see a third Drill winning the COMSAT Merit Scholarship Award? It could happen.

Laura G. Drill receiving COMSAT Merit Scholarship certificate from Dr. Joseph V. Charyk, President and Chief Executive Officer.

PHOTO BY MICHAEL K. GLASBY

Two members of the COMSAT GENERAL Accounting Department were recently awarded Masters of Business Administration degrees by George Washington University in Washington, D.C. The two are Perry Moy, left, Supervisor, Revenue Accounting, and Choon J. Kang, Supervisor, Property Accounting.

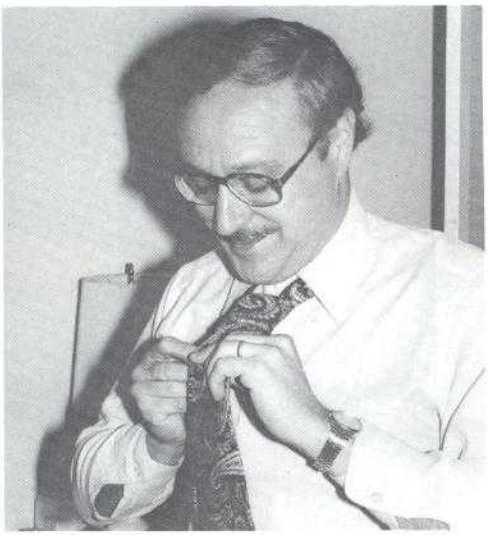
Sidney Metzger, Assistant Vice President and Chief Scientist, was recently honored as one of 25 outstanding alumni of Polytechnic Institute of New York. In a letter to Metzger, the President of Polytechnic Institute stated, "These 25 awards for pre-eminent professional achievement represent the major feature of our observance of Polytechnic's 125th Anniversary."

(More "People" on page 32)

The Photographer Looks At...

IRVING GOLDSTEIN

With this photo feature, we begin a new series in PATHWAYS: *The Photographer Looks At.* For this first in a series, our subject is Irving Goldstein, Vice President, International Communications, whose thoughts on the present and future for the line of business that he heads are contained in the first article in this issue. Goldstein joined COMSAT's Office of General Counsel in 1966 following three years with the Federal Communications Commission. In 1972 he was named Director of COMSAT's European Office with responsibility for corporate interests and activities in Europe, Africa and the Middle East. He was subsequently selected as Director of International Affairs and in 1977 was appointed Assistant General Manager for External Relations and Business Development, International Operations. In 1979, he was elected Vice President and General Manager, International Communications. Here as photographed by Bill Megna is a typical day in the life of Vice President Goldstein.



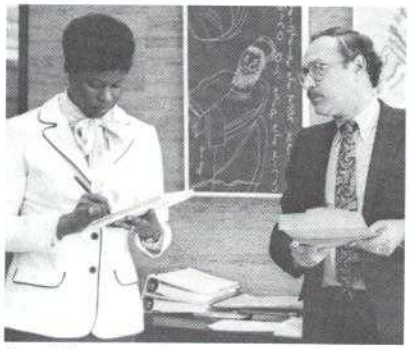
Wednesday, April 16. Another day, another tie.

Note the tennis racket bag.

Out the door as wife, Susan, looks on. It's 8:20 a.m.

A day's work and a 6 p.m. tennis match await the COMSAT executive.

But first, there's the 30-minute drive from Chevy Chase to L'Enfant Plaza.



On his way down the 8th-floor hallway to confer with Agnes C. Smith, Executive Secretary.

Rehearsing a presentation for an upcoming Board meeting as other COMSAT officers look on.

Businessman's lunch at The Broker with Jose Alegrett, Director, External Relations, INTELSAT.

Staff meeting with assistant general managers and Lawrence M. Devore, Assistant General Counsel (third from left).

Describing INTELSAT System and COMSAT's international communication services to Mexican businessmen.

Working afterhours — as usual.

Signing out.

Walking through a deserted Plaza shopping center. It's 7:30 p.m.

The lone car in an empty lot.

The Photographer Looks At...

IRVING GOLDSTEIN

Never got to play tennis.

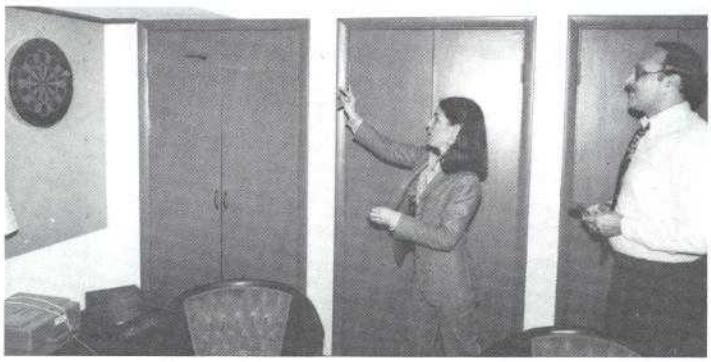
Welcome home.

Who doesn't come home to bills?

Elizabeth, 13, at the piano.

Helping Jill, 9, with her math.

A business call to Australia to Randolph Payne, former Chairman of the INTELSAT Board of Governors.



A game of darts in the family room with Susan.

Finally, the evening constitutional with Lucky.

Pic 19

As these pictures show, the COMSAT Employees Association picnic, held at the Smokey Glen Farm in Gaithersburg, Maryland, was a great time for the 1,234 COMSAT employees and guests who gathered for an afternoon of food and fun.

The picnickers enjoyed a buffet of chicken and roast beef, lots of soft drinks, 20 kegs of beer, 1,000 hotdogs and 2,000 ice cream treats.

The musical activity was square dancing, a

switch from last year's Bavarian folk dancing. The popular events included the beer-drinking contest, the tug-of-war, a pie-eating race, horse-drawn hayrides—and, of course, volleyball and softball. Unfortunately, the hot-air balloon ride—a favorite with the kids—had to be curtailed because of wind conditions.

Congratulations are extended to Eli Wachsberg, Gus Souris, Pat Sample and Claudette Tucker for arranging a perfect day—right down to the weather.

BLACK AND WHITE PHOTOS BY MICHAEL K. GLASBY

COLOR PHOTO BY JACK TENNANT

Benefits—better than you may think

NOTES FROM PERSONNEL

By Holly Pryatel

Did you take a good look at the first page of *Your Personal Statement of Benefits—1979* that was sent to your home last March? That page shows the dollar value of most of the benefits that COMSAT provided for you last year.

On the average, the value of company benefits augmented each employee's annual pay by about 32 percent in 1979. You can figure your own actual percentage from the first page of your benefits statement.

There are advantages to receiving a 32-percent addition to salary through benefits instead of cash. First, cash would be taxed as income, while benefits are either tax free or tax deferred until you receive a cash payout. Second, if you had to buy an individual insurance policy for each of the insurances COMSAT provides, you would find the cost of the premiums to be rather high. COMSAT obtains group rates and therefore not only offers cheaper premiums to you but also pays either all or a large part of the premiums for you.

* * *

COMSAT's benefit program is very good. If you want to check that statement for yourself, read an article in *Business Week* called "How to Size Up Your Company Fringe Benefits." It points out the features of "good" fringe benefits programs. The two-part article appears in the April 28 and May 12 issues.

* * *

One of the better parts of our *good* benefits program is the Thrift and Savings Plan. The company will match 50¢ to each $1 you contribute, up to 6 percent of your base salary. The additional non-matched 4 percent also earns the interest of the fund you have chosen: Fund A has a guaranteed interest rate for the period May 1977 to May 1982, Fund B is invested in common stocks and therefore varies with stock-market performance. You can change your investment direction each year in April.

Many people use Thrift and Savings for expenses, like a house or a college education. At some point, however, it would be to your advantage to treat the savings as a supplement to your retirement benefits. If you can leave your money in the plan until you retire, you would be able to take advantage of the special tax provisions that apply at that time. At retirement you receive a lump sum distribution from the Thrift and Savings Plan. If you average this sum over 10 years, you could end up paying half (or less) of your ordinary tax rate. And, according to Business Week, long-service employees who contribute to a thrift plan can retire with money from the plan that could be twice the amount of their annual salary.

If you want to join the Plan, fill out CSC 844, "Thrift and Savings Participation," in Personnel or from your local administrator. Participation begins at the beginning of each quarter of the year. For more information about the Plan, read the SAVINGS section of your Employee Handbook.

* * *

Have you ever wondered why it isn't easy to take your money out of Thrift and Savings? It's because of a tax doctrine called "constructive receipt." Under this doctrine, if you were able to withdraw the money at any time, it would be treated the same as a bank savings account, and you would pay tax on that income in the year earned. According to the IRS, you can defer paying tax on income only if you do not actually receive the income because it is legitimately out of reach. Because the company contributions and all earnings in the Thrift and Savings Plan are considered income, the company protects employees from the application of "constructive receipt" by imposing barriers to easy withdrawal of the money.

* * *

If you have a government security clearance and you are transferring between COMSAT and COMSAT GENERAL, or if you're changing work locations, please check with Gloria Ford at Headquarters Security Office (ext. 6606), or, at the Labs, see Bill Bruce; at MCE see Sharon Properzio. The government has to be notified of such changes, and because you are not going through the regular termination procedures where you would have to check out at Security, it is difficult for Ms. Ford to keep track of these changes.

When you make a periodic check of your Profile Form, be sure your clearance is reflected in the box on the right side numbered 108.

* * *

The computerized leave report that Payroll issues to each department shows each employee's vacation, holiday, and sick leave eligibility and use. If you haven't seen this report, ask your supervisor about it—you should be checking it to see if it's correct. If it's not correct, check the copies of your time sheets to see if you put hours worked on the wrong line. If that's not the problem, call Payroll for help.

* * *

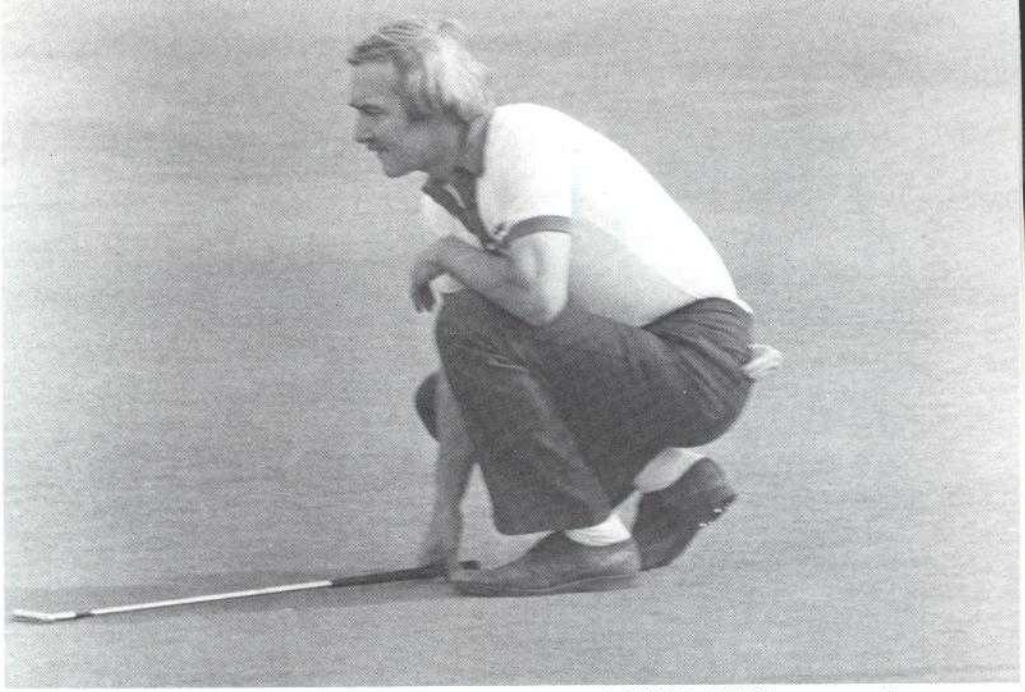
In case you've been avoiding jogging or taking exercise classes at lunch time because you don't want to go back to work hot and sticky, you'll have to find another excuse—

(Continued on page 44)

Ms. Pryatel is an Employee Relations Specialist in the Personnel Office.

THE COMSAT-INTELSAT CHALLENGE

SPRING 1980 GOLF TOURNAMENT



Dick Wyatt of COMSAT GENERAL measures his putt during the tournament.

BY JOSEPH F. DONNELLY

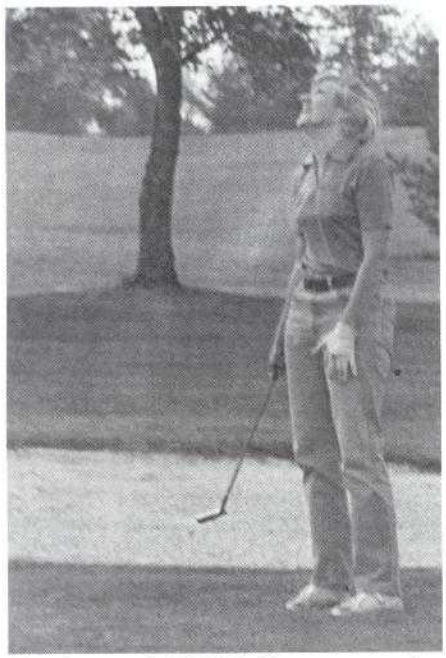
May 8 dawned rainy and miserable, but it did not faze the avid golfers who participated in the Spring 1980 COMSAT Golf Tournament (after all it does not rain on a golf course). All turned out well as the sky cleared and our best participation in recent memory had its usual swinging time.

This tournament was unique as it marked the first of what we hope are many official competitions between INTELSAT and COMSAT. INTELSAT hurled a challenge at COMSAT for best score based on best-ball-per hole between participants of COMSAT and INTELSAT for a trophy provided by INTELSAT. COMSAT took the trophy with a best-ball score of 67, against 71 for INTELSAT.

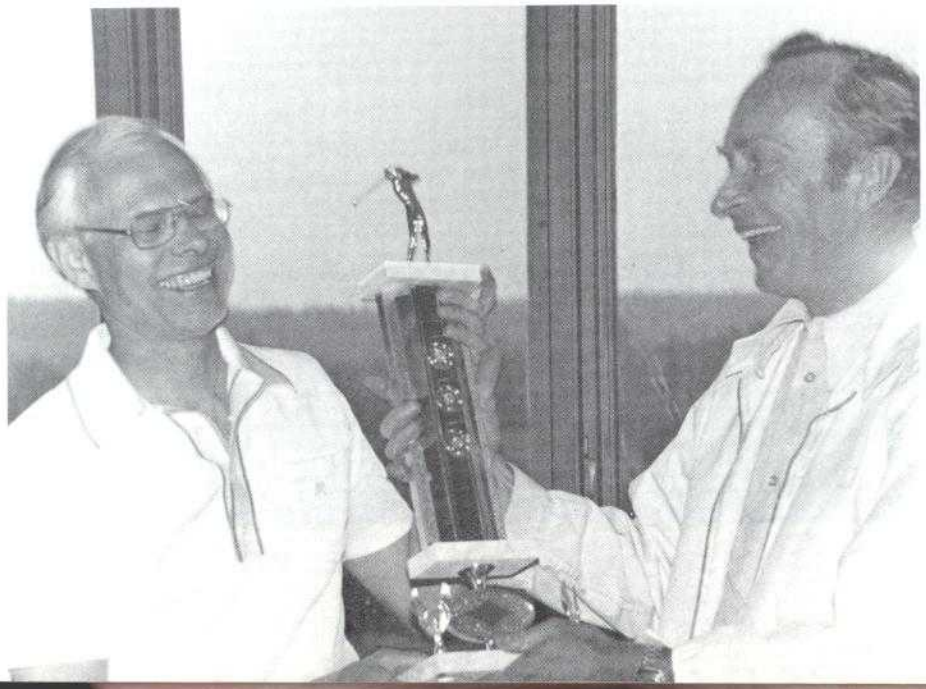
Individual honors for low gross went to Don Greer for the men and Dorothy Bennett for the ladies. Low net men and ladies went to Bill Kreutel and Paulette Luper. Marv Bowser had low gross in the guest category and John Donohue carded low net. J. Sites was closest to the pin for the men and Dorothy Bennett for the ladies. Longest drivers were Marv Bowser and Paulette Luper.

See you in the fall.

Mr. Donnelly is Manager, Proposals and Purchasing, Procurement Services.

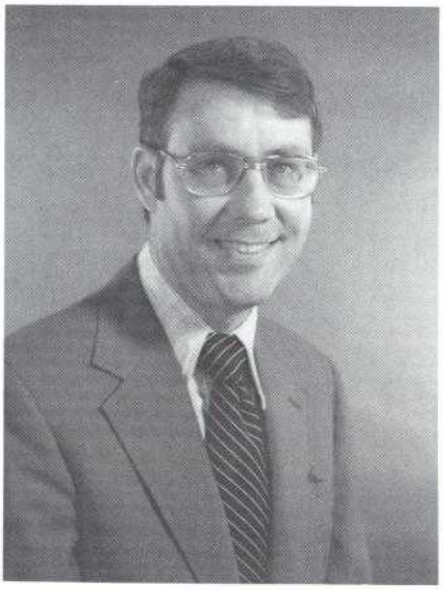


Mary Penrose of COMSAT Labs appears to be seeking help from a higher power before attempting her next shot.



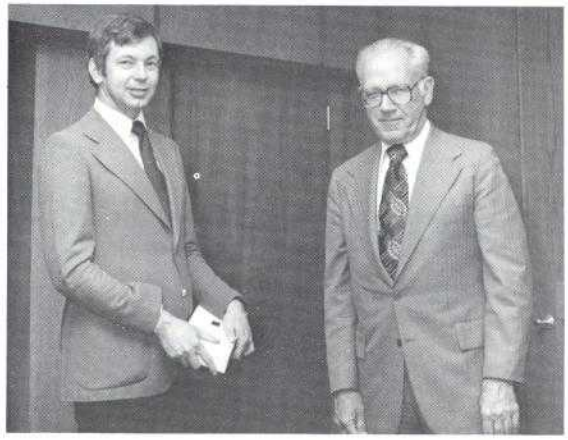
COMSAT's Joe Donnelly, right, accepts team trophy for best ball per hole from Paul Troutman of INTELSAT. The COMSAT golfers fired a 67 against INTELSAT's 71.

PEOPLE AND EVENTS



Tom Kirkendall, Manager of Analytical Services at COMSAT Labs, was chosen to receive the Outstanding Member Award for 1980 by the Baltimore-Washington Section of the Society for Applied Spectroscopy. Tom is a former Chairman ('77-'78) and Treasurer ('74-'76) of the S.A.S.

Ronald Letteney of MCE (left) recently received his 10-year Service Award from Dr. J. V. Harrington, Senior Vice President, Research and Development, and Director of COMSAT Labs.

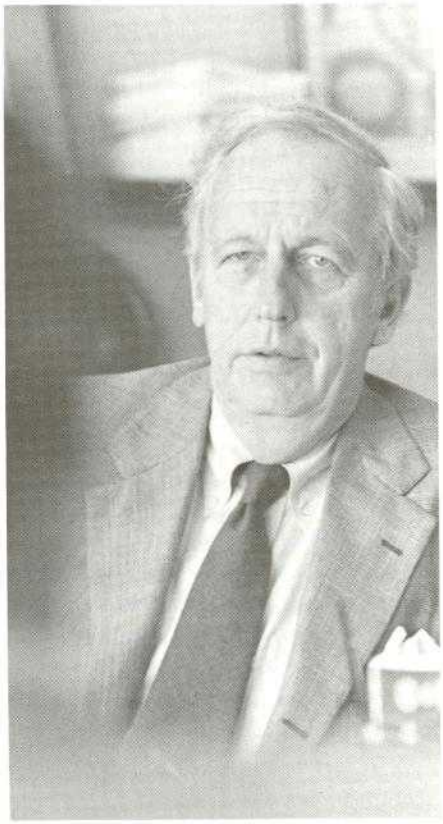


Below: Bob Barber (right) recently presented COMSAT Labs Safety Awards to (left to right) Donald Dopp, Janet Glover and Joe Kasser.

Winners of the latest COMSAT Patent Incentive Awards are: (seated left to right) Y. S. Lee, K. Virupaksha, R. Lindstrom, Shanti Gupta; (2nd row left to right) Dr. J. V. Harrington, presenter, R. W. Kreutel, A. Cornfield, J. Reynolds, H. Suyderhoud, R. Garlow, R. Ridings, S. Rhodes, L. Lee.

An interview with former Senior Vice President

BEFORE DEPARTING COMSAT in early July, Lucius D. Battle, whose two-part career with the Corporation spanned a period of about 12 years, granted an interview to Steve Saft, Editor of *Pathways*. Now Chairman of the Johns Hopkins Foreign Policy Institute of the Johns Hopkins School of Advanced International Studies in Washington, D.C., Battle joined the Corporation in 1968 following a distinguished career in the Foreign Service. He stayed until June 1973. He returned about a year and a half later, at which time he assumed the title of Senior Vice President, Corporate Affairs. What follows is only a portion of the conversation between Battle and Saft, but it should be sufficient to provide an insight into the accomplishments of the man both in the field of foreign affairs and with COMSAT and of his continuing enthusiasm for the future of the Corporation.



PHOTOS BY BILL MEGNA

Q: What brought you here to COMSAT*?*

BATTLE: There were a number of things that brought me here. I had had a particularly strenuous few years before I came here, first as Ambassador to Egypt and then as Assistant Secretary of State for the Near East and South Asia. The Middle East was very troubled then, not as troubled as it is now, but I was in office at the time of the Six Day War and the Cyprus Crisis of 1967. I was absolutely exhausted. I felt I had nothing more constructive to give to the solution of the Middle Eastern problems, and I thought it was time somebody else tried. I had various chances to take jobs and some very good offers in New York, but I never wanted to go there. I decided I wanted to work here.

David Acheson is really the person responsible for my coming to COMSAT. He is the son of Dean, for whom I had worked for many years. David, incidentally, has an excellent book of his father's personal correspondence that's just come out. Two or three of the letters his father wrote me are in the book.

David said, "Why don't you talk with our chairman?" Then he took Jim McCormack, who was then Chairman, Joe Charyk and me to lunch, and that started it.

I had been Assistant Secretary of State twice. I have been Ambassador once, and I didn't see anything else in the State Department I really wanted to do. I wanted to get out for awhile. I always thought I would go back, and I have been offered posts in every Administration since I left, Republican and Democratic, which pleases me. But at no time did any of them seem to me to be right at that particular moment, and as time went on, I wanted less and less to take the family abroad again. So I stayed here.

The Carter Administration offered me a couple of posts including Ambassador to Iran. Cy Vance called with the offer. That was the early part of this Administration, and I am very happy that I had the wisdom or good luck not to take it.

I always thought that I would be returned to diplomacy one day. I doubt that I will now. It is an increasingly demanding and increasingly dangerous job. There were alleged threats on my life when I was an ambassador, but I never took them seriously. Mobs were around the house a couple of times. Things of that sort, but I wasn't a bit scared. Today, I would be terrified and absolutely convinced they meant business.

So now it has become a more difficult career and in some respects less important. Today so much can be done by telephone direct from government to government, and while I don't believe that we will ever not need ambassadors, still their importance has been diminishing.

(Continued on next page)

LUCIUS D. BATTLE

BATTLE

(Continued from page 33)

Q: I take it then that you would agree that the success of COMSAT *and the dramatic improvement in global telecommunications has had something to do with this change in the manner in which diplomacy is conducted?*

BATTLE: Yes, I would. It used to take months to get a communication by sea from this country to an ambassador. Whatever the crisis was, it was over by the time the instructions arrived. In those days, the ambassador had considerable leeway, because he acted and hoped that he understood the position of his government. This has been steadily changing, beginning with the introduction of the telephone and radio.

Q: You have seen a number of changes during your two terms with COMSAT. *How would you characterize the most noteworthy of those changes, how would you describe them?*

BATTLE: The recent period when we have been looking for new areas of activity, the new horizons, has been terribly interesting and will continue to be so.

The first period for COMSAT was fascinating because during that time we were building the INTELSAT structure. The first era when I was with the Corporation we were focusing on INTELSAT, negotiating the definitive arrangements, making this a viable and effective organization. In the second period, we have been broadening the perspective of the organization. We have been concerned with the question: in addition to INTELSAT, where are we going?

Q: What challenges does the Corporation face in the 1980s and beyond, as you see it?

BATTLE: I don't think phase two, as I outlined it, is over. There is still a long way to go. I think there are many encouraging signs. I have the feeling that neither the Congress nor the FCC really wants to limit us. They may want to define more precisely, perhaps, those areas in which they believe we should function but I do not think their interest in our activities is necessarily an entirely negative thing. The recent FCC study of COMSAT is in many respects encouraging.

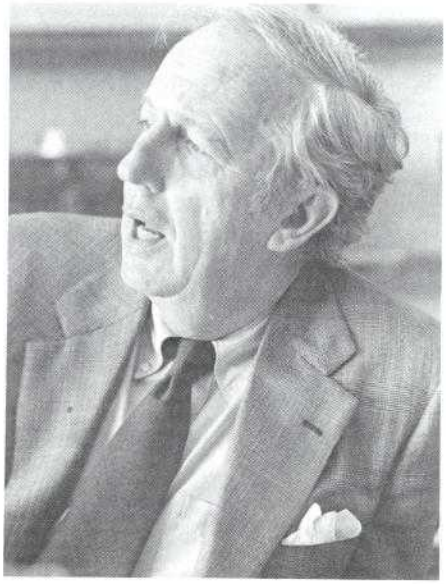
I don't know what phase three will be like. I suspect that, ultimately, technology and advances therein will in large measure determine it. We're just beginning. Some of the things like direct broadcasting and SBS are going to take some years to absorb and to refine and to develop, and so I suspect phase two will be a long phase.

"I have the feeling that neither the Congress nor the FCC really wants to limit us. They may want to define more precisely, perhaps, those areas in which they believe we should function but I do not think their interest in our activities is necessarily an entirely negative thing . . ."

Q: You have worked closely with the FCC, with Congress, I suppose other elements of the Administration during your two tenures. Has that relationship changed? Have you seen changes in the attitudes emanating from these institutions as regards us? Have the challenges been different?

BATTLE: Yes, there are changes. I would not say drastic ones. I don't want to get into personalities. We've had good and bad times in terms of relationships with all these organizations. In the main, I think we have achieved an amazing success in what we have undertaken with basically the support of Government. Sometimes the FCC can be maddenly bureaucratic, and I've said that to everyone of the Commissioners many times. They are groping for answers to many of these issues themselves.

There are times when bureaucracy is a horrible impediment, but I think our relations with the Commission have been in the main pretty good, and certainly they have been good with the State Department. We've had very few fundamental differences with them. The NTIA has gone through more phases than we have. They were in the White House in one form, then in another, and then over in Commerce. They have been groping for their own role and trying to define it.



Q: On the subject of the latest proposal for reorganization that has come out of the FCC, I wanted to ask you about one proposal specifically and that is that there be a government representative sitting with us at INMARSAT *and* INTELSAT *meetings.*

BATTLE: That would be a very serious mistake. This proposal, it seems to me, is going to find a lot of opposition, and I believe that at the hearings of the FCC there were more commissioners opposed to it than for it, by far. The staff even backed away in the course of the discussion. I do think that it would be a mistake, and I've talked with several members of the Commission staff, and they are having a lot of second thoughts on this subject. I really don't take this one as a likely development.

Q: We touched on your extensive background in international affairs. Specifically, how do you think that that background has helped you or come into play in your role here with COMSAT*?*

BATTLE: It is hard to analyze one's own performance in terms of what makes it good or bad or both. My life has brought me enormous variety of experience and with it a wide variety of acquaintances and friendships. I used to spend a lot of time on the Hill, and that certainly was very valuable when I came over here. My familiarity with the processes of the Congress and of the members of Congress was helpful. In the beginning, my experience in foreign affairs also was helpful. We made several trips around the world with a group of State Department people. COMSAT people and State Department people went together. We were working on the definitive arrangements for INTELSAT at that time.

Q: Do you have any advice that you would like to give your successor, Del Smith, who is coming in to take over some of your responsibilities?

BATTLE: Any advice I have to give to Del I think I'll give in private. I certainly will give him every help I can. I hope he will find the same kind of cooperation that I have received. I made a lot of friends here in this building, and I expect to keep them. I don't expect my departure to be the end of it. It never is the end with me. And I fully expect to be coming back over here and to keep in touch with Joe Charyk, with members of the Board, with my fellow vice presidents. I will surely give them all advice as time goes on, bit by bit by bit, as long as they'll listen.

"I have worked at COMSAT more years than I have worked anywhere else. I wouldn't have stayed if I hadn't liked it. Therefore, as far as I'm concerned it is a good place to work. No place is perfect. Imperfections are in every situation. But I do think it is an attractive place for young people to work."

Q: A mischievous question, if I may. Is COMSAT *a good place to work? Would you advise a young person looking for a career to come here?*

BATTLE: I have worked at COMSAT more years than I have worked anywhere else. I wouldn't have stayed if I hadn't liked it. Therefore, as far as I am concerned it is a good place to work. No place is perfect. Imperfections are in every situation. But I do think that it is an attractive place for young people to work. Yes, I think there are uncertainties as to where we are going, but I think whatever direction we finally end up in will be interesting and stimulating.

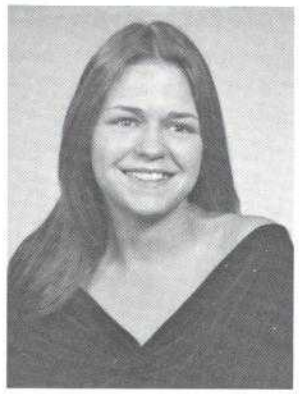
Q: You are optimistic about the future for this Corporation?

BATTLE: Yes, my departure has nothing to do with any lack of optimism.

GRADUATES 1980

PATHWAYS is pleased to present the 1980 graduates — the sons and daughters of COMSAT, COMSAT General, INTELSAT and ERT employees.

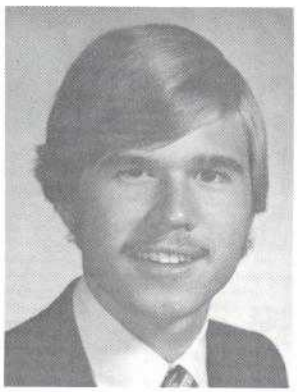
Lori Lynn Balentine, daughter of JAMES A. and Diemut Hall (Headquarters), Seneca Valley High School



Claudette L. Barrett, daughter of GENE and Lucille Barrett (Labs), Atholton High School, Columbia, Md.

Susan Elizabeth Bland, daughter of FLOYD and Peg Bland (Labs), Loch Raven Sr. High School, Towson, Md.

Kelly L. Blatnik, daughter of Hank and PATRICIA Blatnik (Jamesburg), Carmel High School, Carmel, Calif.



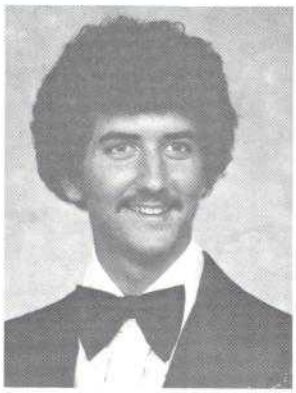
David Blood, son of Iva Dane and DAVID W. Blood (ERT, Concord), Lincoln Sudbury Regional High School

Nina Susan Bohrod, daughter of Patrick L. and BARBARA T. Kelly (ERT, Concord), Bedford High School

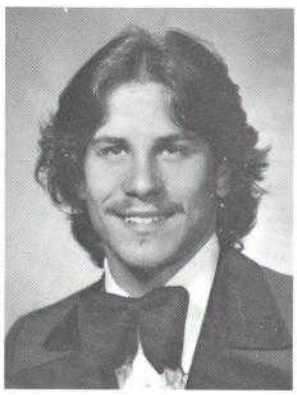
John Bowman, son of MR. and Mrs. C. T. Bowman (Labs), Richard Montgomery High School, Rockville, Md.

Cathy Sue Briggs, daughter of DON and Mary Briggs (Brewster), Bridgeport High School, Bridgeport, Wash.

Becky Bruce, daughter of BILL and Elaine Bruce (Labs), Thomas Jefferson High School, Frederick, Md.



David E. Burks, Jr., son of DAVE and Mary Ann Burks (INTELSAT), B.S. with Honors, Music and Audio Engineering, Indiana University

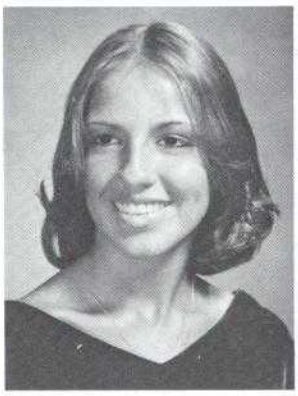


Anthony Campitell, son of ANITA L. Campitell (Labs), Good Counsel High School, Wheaton, Md.

Annetta Lucretia Caprio, daughter of GEORGE J. and Alvina V. Caprio (MCE), Jefferson High School, Charles Town, W. Va.

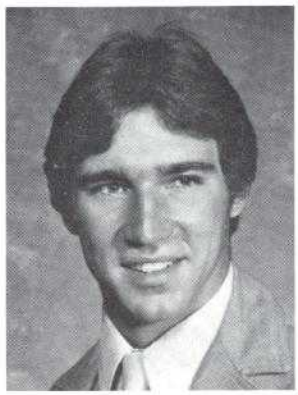
Diana Lee Carroll, daughter of ROSEMARIE Eureka (Southbury), Associate Degree, Mattatuck Community College

Doreen Marie Carroll, daughter of ROSEMARIE Eureka (Southbury), Wilby High School



Maria Teresa Caudle, daughter of Raymond and TERESA Caudle (INTELSAT), Thomas S. Wooton High School, Rockville, Md.

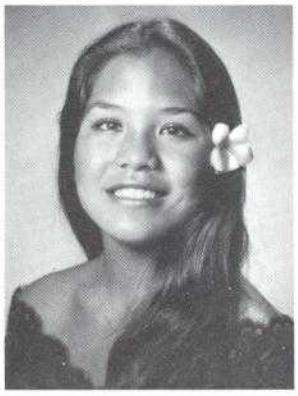
Kathy Cheeseman, daughter of TOM and Audrey Cheeseman (Brewster), Okanogan High School, Okanogan, Wash.



Gary F. Cochran, Jr., son of GARY and Virginia Cochran (Etam), Grafton High School, Grafton, W. Va.

Garry R. Crane, son of ROBERT R. and Emma R. Crane (ERT), B.S., Electrical Engineering, Worcester Polytechnic Institute

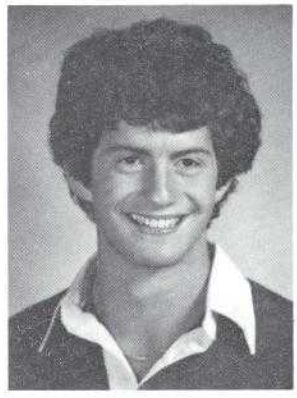
Katherine A. Crane, daughter of ROBERT K. and Emma R. Crane (ERT), Acton Boxbrough Regional High School



Lynette K. Daikoku, daughter of YOSHIAKI and Naomi Daikoku (Paumalu), Kalaheo High School, Kailua, Hawaii

Pamela I. Dendall, daughter of ROBERT and Carol Dendall (Headquarters), Seneca Valley High School, Germantown, Md.

Lori Jean Donnelly, daughter of JOSEPH and Margot Donnelly (Headquarters), Thomas Jefferson High School, Alexandria, Va.



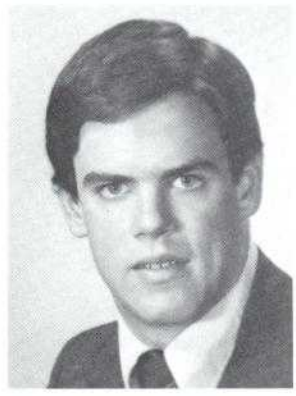
John G. Edelson, son of BURTON and Betty Edelson (Headquarters), B.A., Yale University

Elizabeth Ann Engblom, daughter of RICHARD and Jane Engblom (Andover), Rumford High School, Rumford, Me.

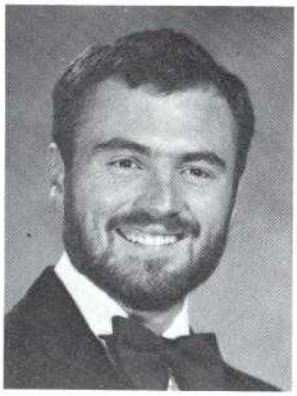
Jon Francis Puaala Estores, son of Angeline and GILBERT Estores (Southbury), Newtown High School

Kathy Fagan, daughter of JOHN Fagan (Headquarters), Satellite High School, Satellite Beach, Fla.

Helen Ann M. Fallon, daughter of WILLIAM and Phyllis Fallon (Labs), Immaculata Preparatory School, Washington, D.C.

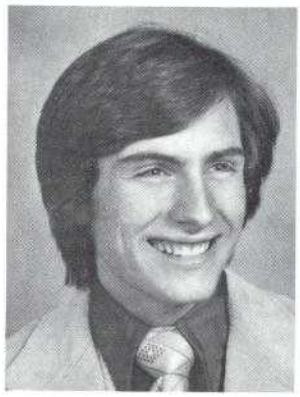


John P. Falvey Jr., son of JOHN and Mary Falvey (Labs), The Landon School, Bethesda, Md.



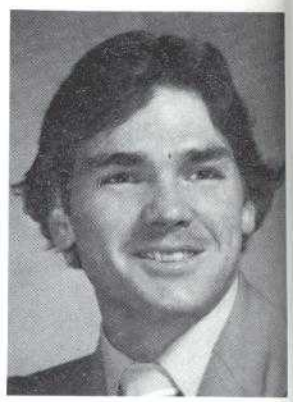
Bernard G. Farrell III, son of BERNARD Jr. and Jaqueline Farrell (Headquarters), B.S., Industrial Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Va.

Gary R. Farrell, son of BERNARD Jr. and Jacqueline Farrell (Headquarters), Associate, Civil Engineering, Northern Virginia Community College, Annandale, Va.



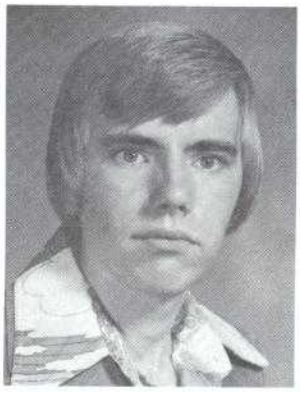
Jeffrey R. Farrell, son of BERNARD Jr. and Jacqueline Farrell (Headquarters), George C. Marshall High School, Falls Church, Va.

Andrea Feigenbaum, daughter of IRWIN and Iris Feigenbaum (Labs), B.S., Accounting, University of Maryland



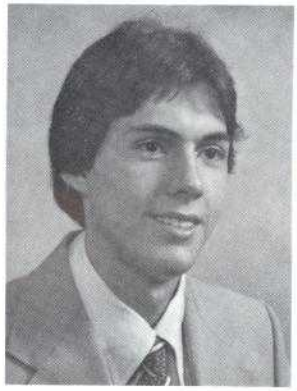
Christopher Fleming, son of PAUL and Jean Fleming (Labs), B.S., Biology, Frostburg State College

Laura Flieger, daughter of HOWARD and Audrey Flieger (Labs), The Holton Arms School

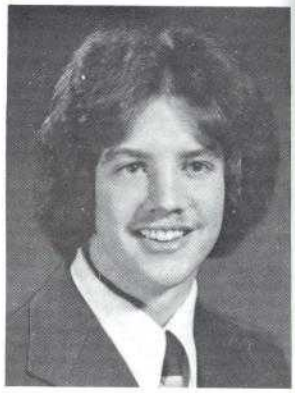


Claude A. French III, son of CLAUDE A. and Doreen French (ERT), Bedford High School, Bedford, Mass.

Robert O'Neal Funkhouser Jr., son of Charlene and ROBERT O. Funkhouser (Labs), Robert E. Peary High School, Rockville, Md.

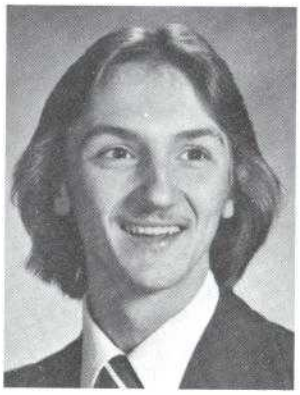


Barry Lee Greene, son of ROY and Darlene Greene (Headquarters), Fairfax High School



Jeffrey D. Gross, son of HARRY and Clara Gross (Headquarters), Sherwood High School, Sandy Spring, Md.

Robyn Elizabeth Hall, daughter of JAMES A. Hall (Headquarters), Walter Johnson High School



Stephen Hanna, son of PAUL R. Hanna (Headquarters), Parkdale Senior High School, Riverdale, Md.

Kathryn Anne Hanson, daughter of HERBERT and Anne Hanson (Headquarters), Delaney Senior High School

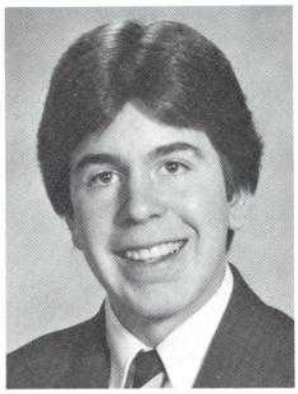
Dennis L. Jones, son of DARLEEN and Laird Jones (M&S), B.S., Business Administration, University of Maryland

George John Kashuba Jr., son of George J. and DOROTHY M. Kashuba (ERT), B.A., Economics, University of Notre Dame

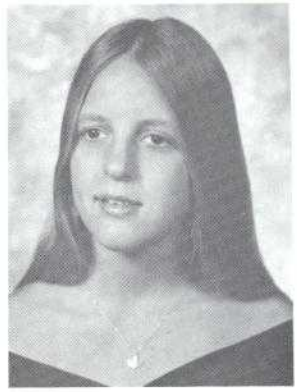
Susan Elaine Keck, daughter of Natalie and WILLIAM J. Keck (Headquarters), B.S., Management, Housing and Family Development, Virginia Polytechnic Institute and State University

M. Ellen Kilcoyne, daughter of JAMES H., Jr., and Nancy Kilcoyne (Headquarters), B.S., Business Management, James Madison University

M. Susan Kilcoyne, daughter of JAMES H., Jr., and Nancy Kilcoyne (Headquarters), Georgetown Visitation Convent

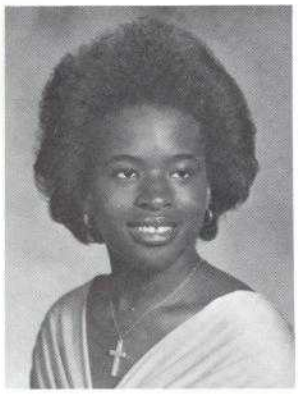


James Thomas Kreutel, son of R. WILLIAM and Alice Kreutel (Labs), Richard Montgomery High School, Rockville, Md.



Donna Lee Krivos, daughter of DONALD and Mariellen Krivos (Headquarters), Brunswick High School, Brunswick, Md.

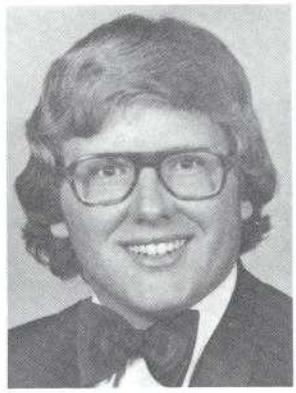
Sally Lepage, daughter of CHARLES and Joan Lepage (Andover), Rumford High School, Rumford, Me.



Debra E. Lee, daughter of Sam and PAULINE Lee (Headquarters), Potomac Senior High School

Monica McRorie Lester, daughter of JAMES and Romualda McRorie (Labs), B.S. Library Science, University of Maryland

Kathryn Irene Lynn, daughter of Jack and DEANNA Lynn (ERT), Lexington High School, Lexington, Mass.



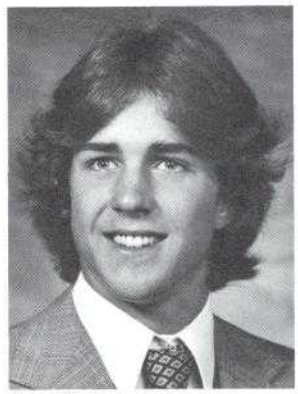
Thomas Robert Maddox, son of JOHN (Labs) and BARBARA (Telesystems) Maddox, Robinson Secondary High School, Fairfax, Va.

Francine M. Marshall, daughter of CAMBRELL and Francetta Marshall (Jamesburg), Seaside High School, Carmel, Cal.

Barbara Lynn Mauser, daughter of ROSALIE and Gary Mauser (ERT), B.S., New Hampshire College, Manchester, N.H.

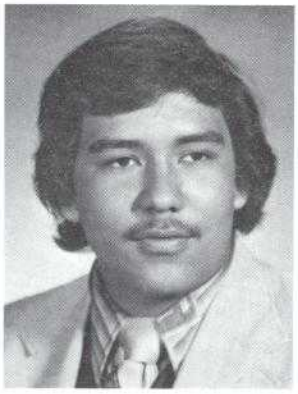
Linda Dale Mauser, daughter of ROSALIE and Gary Mauser (ERT), Chelmsford High School

William Thomas Mayes, son of WILLIAM C. MAYES (Etam), Grafton High School

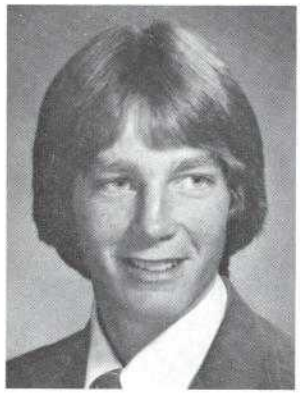


Michael B. McBride, son of RICHARD and Cecile McBride (Headquarters), Walt Whitman High School, Bethesda, Md.

Maureen M. McCarthy, daughter of Marion and EUGENE McCarthy (Headquarters), B.S., Physical Education, Recreation and Health, Slippery Rock College



Alexander Kendall McKeague, son of LOUIS McKeague (INTELSAT), Friendly High School



Scott P. McKee, son of WALTER and Mary McKee (Headquarters), Wootton High School, Rockville, Md.

Walter S. McKee Jr., son of WALTER and Mary McKee (Headquarters), B.A., Government and Politics, University of Maryland

Anne Montgomery, daughter of HALE and Carol Montgomery (Headquarters), B.A., University of Virginia

Sharold Ann Nuppula, daughter of BILL and Marie Nuppula (Andover), B.S., Emotional Disturbance, University of Maine

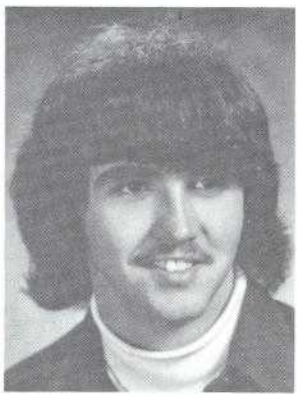
Lisa K. Ogata, daughter of CHARLES N. and Ruth Ogata (Paumalu), Castle High School, Kaneohe, Hawaii

Renee Ours, daughter of DAVID and Jeanne Ours (Headquarters), B.A., Psychology and Sociology, University of Virginia

Kathleen R. Owens, daughter of JAMES and Anne Owens (INTELSAT), Academy of the Holy Cross

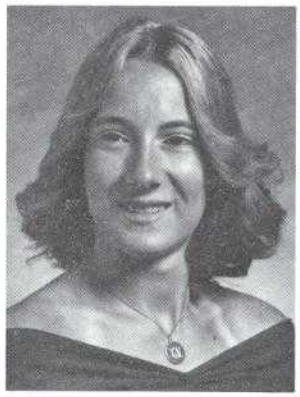
Lawrence Paul Pollack, son of Dorothy and LOUIS Pollack (Labs), B.S., University of Maryland

Janet Potts, daughter of JAMES B. Potts (Headquarters), B.A., Gordon College, Wenham, Mass.

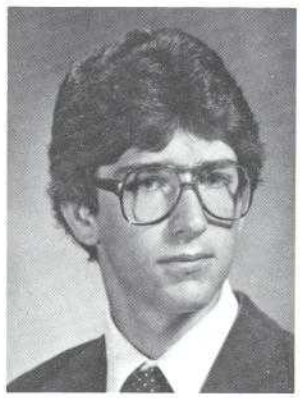


David Richardson, son of BOBBY and Judy Richardson (Andover), Telstar High School, Bethel, Me.

Cynthia Jane Robinson, daughter of Sherry and WILLIAM C. Mayes (Etam), Braxton County High School



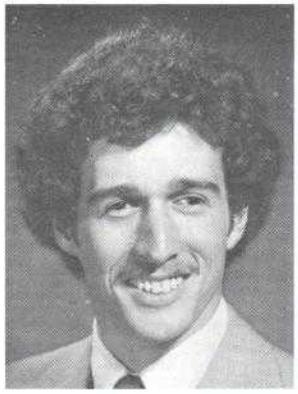
Clairlynn M. Rountree, daughter of Robert M. Rountree (Headquarters), Loudon Valley High School, Loudon, Va.



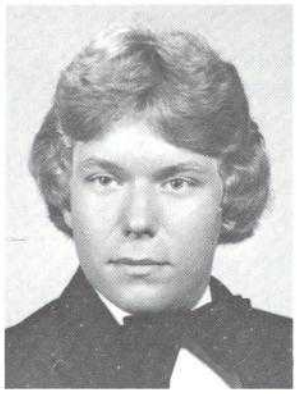
Stephen P. Schrante, son of PAUL and Sandra Schrante (Labs), Seneca Valley High School, Germantown, Md.

Karen Shatzer, daughter of BLAINE and Mary Shatzer (Labs), Middletown High School, Middletown, Md.

Teresa Shatzer, daughter of BLAINE and Mary Shatzer (Labs), Nursing, Frederick Community College

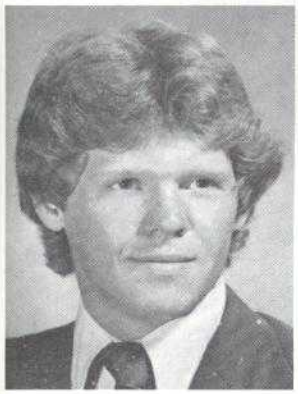


Alan Lewis Smith, son of LEWIS and Alice Smith (Headquarters), B.S., Hotel Management, Cornell University



Clay Speicher, son of Ken and SALLY Speicher (Labs), Walkersville High School, Walkersville, Md.

Michael Stotler, son of A. J. and Judy Stotler (Jamesburg), Carmel High School, Carmel, Cal.



Warren Scott Suyderhoud, son of Flora C. and HENRI G. Suyderhoud (Labs), Thomas Wootton High School

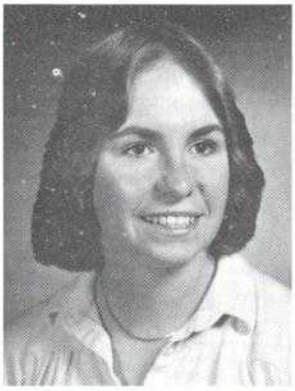
Dena Renée Sweeney, daughter of MARY LOU Sweeney (Headquarters), Friendly Sr. High School, Oxon Hill, Md.

John J. Thaler II, son of Florence and JOHN B. Thaler (Headquarters), D.D.S., Dental School, University of Maryland

Karen Anne Thaler, daughter of Florence and JOHN J. Thaler (Headquarters), Academy of the Holy Cross, Kensington, Md.

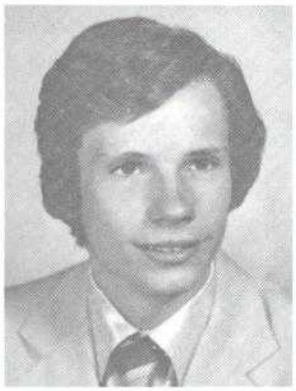
Marshall Joseph Thompson, son of JESSE and JoAnn Thompson (Labs), Brunswick High School, Brunswick, Md.

Teresa Lynn Thornton, daughter of SANDRA Morton (Headquarters), Lackey High School, Indian Head, Md.



Debra Verrill, daughter of DONALD and Janice Verrill (Andover), Edward Little High School, Auburn, Me.

Zandra R. Flournoy Ward, daughter of Booker T. and GLORIA D. Ward (Headquarters), B.S., Fashion Design, Drexel University, Philadelphia



CHRISTOPHER Martin Werba (Southbury), son of Mr. and Mrs. Charles Werba, Pomperaug Regional High School

Ruth Ellen Whitworth, daughter of JAMES and Betty Whitworth (Riyadh, Saudi Arabia), Brillantmont Int'l School, Lausanne, Switzerland

Network Bits
Field Correspondents

Andover
Joanne Witas
Brewster
Dorothy Buckingham
Etam
Bev Conner
Jamesburg
C. B. Marshall
Labs
Norma Broughman
Joan Prince
Blaine Shatzer
MCE Rockville
Shari Properzio
M & S Center
Darleen Jones
New York
Stephen Keller
Pago Pago
Michael Walker
Paumalu
Bob Kumasaka
Plaza
Mary Lane
Santa Paula
Terri Myers
Southbury
Dolores R. Raneri
Tele Systems
Barbara Maddox

ANDOVER. Winter/Spring vacations were taken by **Bobby Richardson,** who drove to Florida during April; **Bill Nuppula**, who spent a week at his cottage on the coast of Maine at Rockland; and **Joanne Witas,** who also drove to Florida during March.

With winter behind us, Andover personnel are looking forward to spring, fishing, and getting the motorcycles out. Our secretary, **Judy Kennedy,** is looking forward to two weeks in Florida during June. **Shaun Arness** and his wife Nancy are looking forward to a trip to the West Coast.

Recent hires include TTC&M Technicians **Clifford Wooten, David Wight, Lauris Davidson** and **Gary Philbrick; Joyce Martin** is our new Accounting/Personnel Clerk. Promoted are: **Barbara Hayden,** our Administrator; **Don Verrill,** Manager, Communications; and **Chuck Lepage,** Manager, TTC&M. Congratulations to **Larry White** and his wife, Nancy, on the birth of their first child, Nicholas Peter, weighing in at 7 lbs 7-1/2 oz. **—Joanne Witas**

ETAM. **Joe Chow,** Facilities Engineer at Paumalu, is now on site as Resident Engineer on Etam's 14/11 construction.

Lenny Gifford, Operations Supervisor, had a run-in with a deer recently, and he lost! The deer darted in front of Lenny's 1979 Horizon when he was on his way to work one evening and did considerable damage to the front end of his vehicle. This is the second encounter he has had in the past year with deer. Lenny said, "One more time and I trade it in!"

George Arison was recently hired as a temporary hire utility person. George resides on Route 50, not far from the site, with his wife, Doris, and two children.

The ECEA bought hamburgers and potato chips for all members on April 30.

Irving Goldstein, Vice President and General Manager, **William Carroll,** Assistant General Manager, U.S. Communications Systems and **Joel Alper,** Assistant General Manager, Operations and Representation, visited Etam May 6 and 7.

With the onset of summer, employees are getting out their plows and rototillers and have begun planting their gardens. **—Bev Conner**

JAMESBURG. We welcome **Arnold Armes** who was recently employed as an Electronic Technician. Arnold hails from Salem, Oregon, and has been employed by various overseas contractors. He is currently working with Team D and resides in Carmel Valley, California. Arnold is single and his hobbies are: amateur radio, swimming, girls, music and reading, not necessarily in that order.

—C. B. Marshall

LABS. Newcomer **Debbie Groomes** joined the Word Processing Staff early in February. Debbie lives in Mt. Airy, but grew up and attended schools in Baltimore. Debbie is engaged to be married (in 1981) and enjoys all sports, particularly softball and bowling. AD WP has already had good reason to appreciate her work capability. Welcome, Debbie!

Shirley Taylor and husband have moved into their solar, earth-sheltered house in Falling Waters, W. Va. Husband Jim designed the house and has done most of the construction. Although not yet complete, the house has attracted interest and visitors from many quarters.

Debbie Moore, daughter of **Gloria Moore,** AD Word Processing, was married on March 8, 1980 to Lt. Terry Carrico, USA. Debbie is a secretary at MCE, Rockville, and formerly was at the Labs. The wedding was performed by Rev. Robert Moore, Debbie's father, at his church, Greenridge Baptist in Clarksburg. Everyone wishes the couple much happiness. They are "at home" in their new apartment on the base at Ft. Meade, Maryland.

Peter Hoover of Communications Processing Labs and Michelle Andve were married on May 17th at Pleasand Valley, Pa. The couple went to Hawaii on their honeymoon. They will live in Germantown, Md.

Jennifer Frank, daughter of **Peggy** and John **Frank,** and a sixth grade student at Germantown Elementary School, along with Casey Wood, daughter of **Pam Wood,** and a sixth grade student at East Middle School, Westminster, have been selected to participate in a special summer program for gifted and talented students sponsored by the State of Maryland Board of Education. Jennifer will be at St. Mary's College for two weeks and Casey will spend two weeks at the University of Maryland. Since they are two out of approximately 700 seventh, eighth and ninth grade students selected throughout the State, their parents are, needless to say, very proud.

Honored at the first annual

COMSAT Service Award Reception held at the Plaza on the 8th floor for 10-year and 15-year veterans were **W. H. Hutchens** and **Betty Linthicum,** each of whom has completed 10 years with COMSAT. **Barbara Wenschof** completed her first year of service.

Betty Linthicum, the Labs Cashier, has joined a women's softball league sponsored by the Bank of Damascus. They're called "Loose Change." They won their first game Monday night 18-17.

The Labs Intramural softball league will get under way the first week of June on the reconditioned Labs Softball Field. Eight teams will compete this year from June through September. The MIT Co-Ops and a new assembly team join last year's six teams. Games start at 6:00 p.m. Monday—Friday. Come on out and enjoy a good time. Special "hats off" go to the outside crew and the Facilities crew and everyone else involved who created the "new" COMSAT field.

COMSAT softball has an entry in the Montgomery County "B" League. There are eight teams in the league. A total of 14 regular season games will be played on Tuesday evenings. The team co-managers are **John Reisenweber** and **Jerry Cramer.** They lost the opening game, which was played on May 6th against Stomback's.

The COMSAT Co-rec volleyball team presently posts a 14-10 record in the Montgomery County League. In the most recent match against the leaders, COMSAT came away from the match with one win out of the four game set. The opposition had lost just one game before the COMSAT match. Regular players include: **Mary Penrose, Gayle Davis, Patti Fritsch, Neil Helm, Lew Parker, John Reisenweber,** and manager **George Huson.**

Congratulations to **Shirley** and Kevin **Anders** on the birth of their daughter Kelly Lova on May 17. Kelly was 7 lbs, 15 oz., and 21" long. **Michael** and Nelly **Serafinas** of the Spacecraft Lab have a new daughter, Christina Marie, born on March 26, (5 lbs, 9 oz, 19-1/2"). **Earl** and Kathleen **Main** of the Spacecraft Lab have a new son, Christopher Robin, born on March 27, (11 lbs, 23-1/2").

Congratulations to the new parents!

Lisa Cook recently had the misfortune of having her Volkswagen convertible stolen while she was visiting a friend in Philadelphia.

Our thanks to the CEA officers and members who have poured time and effort into making all the programs a success. They have been doing an outstanding job.

We're expanding! Drafting has moved into their new quarters (trailers) at the Labs. The medical facility will also be relocated into a trailer shortly.

Pete Ackermann has finally been accepted by the U.S. Government. Welcome to the U.S., Pete. (Pete became a naturalized citizen on May 6th, imported from England).

Eric Ackermann is recuperating after falling and breaking his wrist. **Steve Beall** is still recovering from his auto accident in December. We are sorry that **Brenda Reynolds'** recuperation is taking so long, following surgery on her foot. We miss you, Brenda. Also recovering from surgery is **Dirk Van Der Loo.**

We hope everyone is on the road to good health.

Shirley Anders and **Julie Gabor** are anxiously awaiting the stork, following baby showers given them at the Labs. Best wishes to them.

A wine and cheese party was held for **Pat Fletcher** who is marrying Roger McCoy on May 23rd. Congratulations Pat!

New hires at the Labs include: **John Altman, Charles Fisch, Clemonce Heard, William Thomas, Joyce Stretton, Ramesh Gupta, John Armes, Harry Carbaugh, Judy Jason, Paul Bergmann, Michael Hulley, Robert Birmingham, Deborah Groomes, Shanti Sharma, Steve Stackwick, Paul Wilhelmsen, Paul James, Don Bradfield,** and **Henry Schroyer.**

Dave Merritt, John Bowles, William Simmons, John Wingert, Donna Owen, Josephine Rocha, James Collins, and **Belinda Haddock** have terminated employment.

Italo Ciatti has retired. —**B.P.S.**

M&S CENTER. The Center wishes to extend a hearty welcome to the following new employees: **Tom Person,** Logistic Controller, who came to us from Weinschel Engineering; **Terry McCollough,** Field Support Supervisor, who was previously with COMSAT on an assignment to Brazil; **Shirley Kline, Pierce Stine's** new secretary; and **John Junker,** who has joined us as a Calibration Team member. Also joining our staff are two Work Study students, **Jill Linthicum** and **Edwin Dudley.**

Congratulations to **Ken Harris** and Lynn Geasey on their marriage Saturday, April 19th, and to **Lee** and Agnes **Bolinger's** daughter Janice who became Mrs. David Saba on Saturday, May 3rd, in a beautiful outdoor wedding.

Mr. A. Soetan, our Nigerian visitor, spent 8 weeks of training in the areas of spares, inventory distribution, accounting, procurement, budgets and program management.

—**Darleen L. Jones**

MCE ROCKVILLE. In May the Division donned their Choke Chicken T-shirts and rendezvoused at Gambrill State Park for their First Annual Picnic. Food, drinks and a partying mood prevailed; although it was noted that the food was terrible, the spirits in all the cases were not. **Chris Arant, Tim Deblois, Don Hessler** and **Bill Hixon** provided guitar entertainment. **Bernie Wills** played the sax.

One highlight of the picnic was the farcical awards ceremony. Many outstanding personalities received awards, but first prize as Queen of the May went to **John Bleiweis** from the Picnic Committee by acclamation. **Bob Johnson,** who won by popular ballot, shared the honor as first runner-up.

Consensus has it that the picnic

was a success. It provided the means for escaping the pressures for a while and a chance for everyone to see each of the others from a different point of view. Beyond that, it is to be noted that **Rich Thorne** had "THE BEST" time.

—Shari Properzio

SOUTHBURY. **John H. Lawler** recently joined our staff as a Senior Electronics Technician.

With the advent of warmer weather some of our staff have been avidly participating in the quest for sun and fun: **RoseMarie Eureka** took a long weekend in Atlantic City. Luck went with her, she won eighteen quarters. **JoAnne May** has spent a few weekends on Cape Cod. **May Scott** vacationed on the west coast of Florida this spring. **Anne Mattrella** cruised the Caribbean for a week. **Anne Mancini** stayed in Cancun, Mexico, with a side trip to the Mayan Ruins. She reports that what used to cost a dime now costs two pesos.

Frank Makray decided to be closer to the action and moved to Southbury. **Gordon Johnson** also became a Southbury resident. He's not saying why. **Ron Hicks** recently constructed modern canine quarters on his property. They feature solar heat and a mortgage of 27 dollars. Also some remodeling has been done. **Annabelle Lyle** has transformed her bedroom into a *boudoir*, and **Danny Heath** re-arranged the front end of his car.

—Dolores R. Raneri

PLAZA. **Jera Bradford** of the COMSAT GENERAL Personnel Office has a special reason to be proud of her two children, Rory, 10 and Remi, 11. The youngsters participated in the Washington Area March of Dimes Walk-a-thon on May 4 and went the whole distance—25 miles—earning more than $100 in pledges.

Robert D. Briskman, Senior Program Director, Systems Technology Services, received the United States Activities Board Citation of Honor at the IEEE 1980 Conference on April 28. Soon afterward, on May 2, **Robert** was a guest speaker at the annual conference of the International Association for Social Science Information Service and Technology held in Washington.

Charles Dorian, Director, Technical Planning, MARISAT Systems Management Division, has been awarded the Albert L. McIntosh Memorial Trophy by the American Radio Relay League, a major organization of radio amateurs. The award cites **Charles** for his leadership in the preparation of 1979 World Administrative Radio Conference (WARC) proposals pertaining to the amateur service.

Rock Mattos recently left Headquarters and joined the Procurement Department of MCE.

A few friends and staffers of the Management Systems Department recently threw a 40th birthday party for **Richard Cooper**, Computer Systems Analyst. Most agree that the telegram delivered by National Onion Singing Messenger Service took the cake. The celebrators also honored **Dave Gilomen**, Senior Computer Systems Analyst, whose birthday was the next day. He declined to give his age.

—Mary Lane

(Contined from page 30)

I mean reason. All four of our locations in the Washington area have showers.

At TeleSystems, showers can be found in the men's and women's restrooms near the cafeteria in Building #4. There are lockers there, too, but bring your own lock. MCE has a shower (complete with a rubber duck) in the women's restroom near the Service Center, and one (with a rubber shark) in the men's restroom in the corridor (see the receptionist for the key). The showers at the Labs are in the restrooms by Shipping and Receiving, across from the entrance to the new Medical Unit. At the Plaza, showers are located in the men's and women's locker rooms in the basement near Shipping and Receiving. Contact Sheila Doherty in Personnel (ext. 6730) for directions and for the combination to the locks on the doors.

NEWS

Construction to start on Saipan station

The Federal Communications Commission has authorized COMSAT to begin construction of a $1.5-million earth station on the island of Saipan in the western Pacific Ocean to bring the first satellite communications to the Northern Mariana Islands.

"We look forward to bringing the benefits of satellite communications to the residents of the Northern Marianas as quickly as possible through this new earth station," said Joseph V. Charyk, COMSAT's President and Chief Executive Officer. "This earth station, working with an INTELSAT satellite over the Pacific, will provide the same improved communications as has the COMSAT-owned and operated earth station which began service last October in American Samoa."

The COMSAT owned and operated Saipan earth station will provide the Northern Marianas with direct satellite communications services to and from the United States mainland, Hawaii, Guam, Japan and other points in the Pacific as required. COMSAT will provide its communications services to the Micronesian Telecommunications Corporation, the authorized international communications carrier serving the Northern Marianas.

The station will have a 13-meter dish antenna, a control building and electronic equipment to provide telephone, telex, television and data services via satellite.

Carlos S. Camacho, the first popularly-elected Governor of the Commonwealth of the Northern Mariana Islands, said that he was very pleased "that the people of the Northern Marianas will soon have a satellite earth station in Saipan to permit direct, reliable communications to all parts of the world. These improved communications will encourage economic growth throughout the Commonwealth."

Representative to the United States from the Northern Marianas, Edward Pangelinan, also noted that "this new Saipan earth station and the INTELSAT Pacific satellite will provide a vital link between the federal government and the government of the Commonwealth on important matters affecting the people of the Northern Marianas."

Earth station construction will start immediately with service scheduled to begin by the end of this year. Once built, the Saipan station will be staffed by local residents to the maximum extent possible.

A. Bruce Matthews, the Corporation's Chief Financial Officer from 1965 until 1970, died recently of a heart attack. He was 56. At the time of his death, Mr. Matthews was Chairman and Chief Executive Officer of Coaxial Communications Inc. of Columbus, Ohio. Although he worked in Columbus, Mr. Matthews continued to call Washington, D.C. his home.

Labs offers amplifier that is low in noise

For the first time, a 12-GHz MESFET Low Noise Amplifier (LNA) offering a noise performance comparable to that of a temperature-stabilized parametric amplifier has been demonstrated.

This cooled MESFET LNA, developed by COMSAT Laboratories, is expected to displace conventional parametric amplifiers in satellite communication earth terminals in the 11- and 12-GHz bands. The MESFET amplifiers have the advantages of improved gain stability, simpler RF circuitry, and high reliability.

This fully-engineered and practical low-cost LNA exhibits the lowest noise temperature ever reported for a thermoelectrically cooled 12-GHz MESFET amplifier. Noise temperature of 120 K (NF = 1.5 dB) and power gain of 54 dB at 12 GHz have been achieved. Variations in noise temperature and power gain across the 11.7-12.2 GHz communication band have been measured to be 5 K and 0.8 dB, respectively.

The complete LNA consists of a three-stage cooled preamplifier followed by a three-stage uncooled postamplifier, both designed and developed using COMSAT Labs computer-aided circuit analysis and microwave integrated circuit technology. The GaAs MESFET's used are commercially available NEC NE13700 and NE38800 0.5 micron gate-length devices.

The design yields internal temperatures as low as -90°C with an external temperature of 24°C.

Performance of the COMSAT labs amplifier also is impressive at room temperature. The six-stage uncooled amplifier, including an input isolator, exhibits a noise temperature of 190 K (NF = 2.19 dB) and a power gain of 50 dB at 12 GHz.

SUMMER IS FISHING TIME. Photographed at
Southbury Earth Station, Southbury, Connecticut,
by Bill Megna.