

COMSAT ORAL HISTORY PROJECT

Interview with Carl Reber

Interview conducted by Thomas Maxwell Safely

Interview with Carl Reber
COMSAT Headquarters
3:30pm
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Thomas Max Safely: Why don't we just start at the top, then and ask you to sketch what your job was when you joined COMSAT and how it progressed?

Carl Reber: Well, When I joined COMSAT in July, 1964, COMSAT had just the previous month -- in June -- issued its ten million shares of common stock at twenty dollars a share so that they had on hand two hundred million dollars in equity that they had just received. Well, taken off almost four million dollars, I guess for fees and so forth.^{1/} Up until that time, they had financed its activities by virtue of the ten largest banks in the country.^{2/} Each really loaning up to a half million dollars per bank to the company.^{3/} They drew that down as they needed it, they didn't draw it down all at once.^{4/} They did this because, of course, COMSAT was a

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- 1/ change to: From that amount, four million dollars was deducted for underwriter fees and expenses.
- 2/ change to: Up until that time, COMSAT had financed its activities through ten large banks.
- 3/ change to: Each bank made credit available up to a half million dollars.
- 4/ change to: COMSAT drew down funds as needed.

very significant company chartered, in effect as an Act of Congress.^{5/} The Board of Directors -- the Incorporators -- were very prestigious people, who had a lot of banking connections. So it was not, I believe, (although I wasn't here), too difficult to get the banks to establish that kind of line of credit for them. I don't recall exactly how much of that they drew down, I think, as I recall, maybe a little over two million dollars of the total of five that they had established. But with that two hundred million dollars that they had at that time in equity, of course, they paid off those debts and began with construction of satellites -- of the Early Bird satellites.^{6/} There has been a lot of criticism through the years that they raised too much money initially. It may appear that way^{7/} because for many many^{8/} years COMSAT had no debt;^{9/} maybe almost fifteen years or very

5/ change to: The banks did this because COMSAT was an important new company, authorized by an Act of Congress.

6/ change to: With the \$196 million dollars equity, they paid off the bank debts and began construction of the Early Bird satellites.

7/ add: on hindsight

8/ change: "many many" to "fourteen"

9/ change "debt" to "long term debt"

little until we acquired this building. Really, at the time, the reason for going so high was that they wanted enough to finance an entire system^{10/} if they had to and they didn't have an international agreement at that time. So they had to be prepared to finance the whole system. Also, there weren't sure that a synchronous [altitude] system -- which ultimately was the type adopted -- ^{11/} of course, which is considerably cheaper than a low altitude system with more satellites and more earth stations.^{12/} If they had had a low altitude system and no international participation they would have easily used the two hundred million dollars.^{13/} As a result, they didn't really need it all for the international

10/ change "system" to "low altitude system"

11/ add: would be acceptable for communication services.

12/ change to: A synchronous system was much less expensive than a low altitude system which required more satellites and more earth stations. Also, they didn't have an international agreement at the time that they raised the equity money, so they had to be prepared to finance the whole system.

13/ delete: If they had had a low altitude system and no international participation they would have easily used the two hundred million dollars.

system.^{14/} The money then, the excess, and there was excess as I say for well perhaps fifteen years, gradually diminished.^{15/} The excess was invested very conservatively in a portfolio that was carefully circumscribed by the Board of Directors. One, that was to be in government securities or securities of banks, like certificates of deposit so forth, banks with over a billion dollars of assets so they didn't want to take any chances.^{16/} Secondly, the maturities on all of these were to be no more than two years in the future.^{17/} So that there wouldn't be wide variations because of interest changes and so forth. That was not any problem at all, in fact, I felt very comfortable because it was a very conservative approach and it was proscribed by the Board.

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- 14/ change to: As a result of later developments, COMSAT didn't really need \$200 million for the international system.
- 15/ delete: The money then the excess and there was excess as I say for, well, perhaps fifteen years gradually diminished.
- 16/ change to: They restricted investments to government securities and to certificates of deposit from banks with over a billion dollars of assets; they didn't want any money at risk.
- 17/ change to: Also, maturities on investment securities were limited to no more than two years in the future.

TMS: Why did the Board choose such a conservative approach?

CR: Well, they felt that they got this money from the shareholders, they didn't feel that they were, they didn't want to be in the position of being investment managers for the shareholders, they felt they put it in they wanted to make sure it was protected.^{18/} They wanted to earn reasonable interest, which they got, of course, on government securities or CDs. On the other hand, didn't want take any chances with losing any of the principle.^{19/} It was a very conservative approach. As I say, I felt very comfortable with it.^{20/} It never was a problem. Later on, as time went on, they expanded some, for example, I think in the early seventies, we expanded to cover commercial paper of ten prescribed finance companies like GE, General Motors Acceptance, GUGM, Sears and companies

18/ change to: Well, they got this money from many small shareholders, and they wanted to make sure it was protected.

19/ change to: On the other hand, they wanted to be sure the principal was secure.

20/ delete: It was a very conservative approach. As I say, I felt very comfortable with it.

like that, that put out commercial paper.^{21/} As a result of that, of course, as I said, no debt in the structure so that it was late seventies before we really had any debt at all on the balance sheet. This was of some concern to me and it was of some concern to the FCC as well because normally a utility light company, such as COMSAT was, gets benefit for the shareholders by having some debt in the capital structure.^{22/} A debt being at a lower cost of money the shareholders get the leverage from the equity then that's used.^{23/} We always were very conscious of this; that we had no debt in structure. On the other hand, there were always things on the horizon that appeared to require a great deal of money. Such as in the early seventies, the COMSTAR domestic system and MARISAT system. So that, while I didn't deal directly with the Board

21/ change to: Later, the limitations were expanded; for example, in the early seventies, management requested and was authorized to invest in the commercial paper of ten prescribed finance companies like GE, General Motors Acceptance, and Sears.

22/ change to: This all-equity financing was of some concern to me, and it concerned the FCC as well because normally a utility, such as COMSAT, has some debt in its capital structure.

23/ change to: The cost of debt is usually lower than the allowed rate of return so that shareholders get the benefit from leverage.

until about 1977, but through being fairly high in the finance structure and I handled the international side of the finance activities,^{24/} I was aware, of course, of things that the Board discussed and so forth and I think it did come up from time to time, but there always seemed to be a large requirement ahead for both equity and debt to complement it.^{25/} So that they didn't feel comfortable at anytime in returning the capital to the shareholders for the capital distribution.^{26/} But the FCC was very conscious of it, too, because they said, "Well, now look," during our rate case they said, "a normal company would have debt which would provide the user with a lower cost of capital overall,^{27/} and therefore, we're going to impute debt into your capital structure and treat COMSAT as

24/ change to: I didn't deal directly with the Board until 1977, since I handled only the international side of the finance activities.

25/ change to: However, I was aware, generally, of the Board's view of financial matters. I believe the possibility of distribution of capital did come up from time to time, but there always seemed to be some future need for the money.

26/ delete: So that they didn't feel comfortable at anytime in returning capital to the shareholders for the capital distribution.

27/ change to: The FCC was very conscious of it, too, because in their rate case decision they pointed out that some debt would provide a lower cost of total capital.

though it did have debt." This was one of the things we took in 1975 to the Court of Appeals. In one sense we won. At least we won some relief because the Court of Appeals ruled that it was not fair to impose that immediately with the decision on the rate case, but they had to allow us a reasonable [period of] time to acquire in some logical fashion in some rational way to bring debt into the structure. So they had to allow us they had to negotiate with COMSAT on this point.^{28/} We had some discussions and negotiations with them and the final agreement took until 1978. But, we agreed in 1978 that we would have a five year period to bring debt into the [capital] structure on some sort of rational basis.^{29/} In other words, their view was that we should have forty-five percent debt and so what they did was we finally settled on nine percent increments each year and if we didn't get it we

28/ change "...but they had to allow us a reasonable time to acquire in some logical fashion on a rational and some rational way bring debt into the structure, so they had to allow us they had to negotiate with COMSAT on this point" to "Instead, the FCC was told to allow COMSAT a reasonable period of time to bring debt into its capital structure on a rational basis.

29/ add: over a five year period.

weren't absolutely obliged to do so.^{30/} But, if we didn't they would impute it in any rate calculations.

TMS: So, really the change -- you can't really call it a change in strategy -- the FCC decided that you would have debt in a considerable proportion as well.

CR: Yes.^{31/}

TMS: And COMSAT followed. What did COMSAT do with that money then? Here is the extra money that is suddenly placed, perforce placed at COMSAT's disposal?

CR: Well, it was fortuitous because it came at the time we needed money for SBS and by that time, by '78, we had paid for COMSTAR and MARISAT out of just cash flow from a normal

30/ change to: The FCC's view was that we should ultimately have forty-five percent debt, so we agreed to a nine percent increment each year.

31/ add: Although if we didn't actually enter into debt arrangements, they would impute it.

operation and the equity capital that we had.^{32/} As we started to build up debt that went into investment in our new activities: SBS, we bought a ERT, we later on acquired AMPLICA and then put investment into SBS and STC.^{33/}

TMS: Would you call this a case of the cart leading the horse? It seems like, if I were to read between the lines, listening to what you are saying, I would almost think that here is this money and somebody sat down said, "Well, what are we going to do with it -- will we acquire this or? I mean, did it allow COMSAT to do what COMSAT had long been planning to do?

CR: Yes, I think it's the latter case, I think we recognized from the beginning that in building the international system, building particular a technical staff and operating staff for the international system, we had almost a unique capability that could be exploited in a lot of other areas. We also

^{32/} change to: Well, this came at a time when we needed money for SBS. We had paid for COMSTAR and MARISAT out of cash flow from normal international services and the remaining equity capital.

^{33/} change to: But by 1978, we were investing in new activities, such as, SBS; we also bought ERT; we later acquired AMPLICA; we gradually expanded TELESYSTEMS; and we started Satellite Television Corp.

recognized that we were a regulated company. We were a monopoly in the international business and that, of course, is a limitation so that when you get for a number of years, of course, we were not making our allowed rate of return, but we could see that we were going to because we improved each year. Our losses declined each year and in '68 we passed over and became profitable and then profits increased. We could see even though the rate case wasn't finally settled until 1975 when they made their decision, we could see that there was a limitation up there that would be troublesome as far as the shareholders were concerned. Secondly, we had this talent available that we felt could well be applied in other areas. So, that what I call sort of the second phase of COMSAT was really and we started as the record will show I'm sure that we started back in '66 and '67, as early as that, applying to the FCC for authority to put up domestic satellites. I recall a big meeting with the broadcasters back in, I believe it was '66 because they wanted a satellite for domestic purposes to avoid the AT&T network which was fairly costly to them. So, we had applied for a domestic system. We had [also] applied for MARITIME system and we had, I think, we had applied but we certainly in '67-'68 considered very seriously an

aeronautical system for AEROSAT. So that all of these things were things we wanted to do and had made application for but through, you know, delays and decisions and the go-ahead, we just hadn't had a chance to do it. So, that the availability of this money just happened to be fortuitous. It clearly was not the other way around.^{34/}

TMS: It wasn't a matter of the money providing targets of opportunity?

^{34/} change entire paragraph to: I think we recognized from the beginning that the staff and the technology and expertise needed for the international satellite system could also be productive and useful in other areas of communications. We felt that we had a unique capability that could be exploited in a lot of other areas, and we were looking at these almost from the beginning. As early as 1966 and 1967, we applied to the FCC for authority to establish a domestic satellite system. I recall a big meeting with the broadcasters in 1966 to discuss their use of a domestic satellite system to avoid the AT&T terrestrial network which they considered to be too expensive. We had also applied for MARITIME system, and in 1967 or 1968 considered very seriously anaeronautical satellite to provide communications via satellite between earth stations and aircraft in flight. These were all useful applications which we believed would be commercially viable. But, because of administrative delays, mostly at the FCC, we just didn't get the go-ahead until much later. So, the continued availability of cash reserves was just the result of circumstances.

CR: No, not at all. I think it was the availability of those possibilities caused, were the reasons, for no capital distribution because we clearly could have gotten by with the international system. We figured for the FCC at one time I think for the we could've [inaudible] for sixty million dollars and the international financing, we could have gotten by with that kind of initial equity. So, that the other was all excess. But, there were important things to be done.^{35/}

TMS: Well, let's turn the thing around a little bit. As I asked you earlier, we were talking about this money being fortuitous and coming at a time when COMSAT had things that it wanted to accomplish; projects that it wanted to undertake before this money became available. Had the conservatism of the portfolio strategy ever forced COMSAT to alter its plans to abandon or change satellite services that it had contemplated

^{35/} change entire paragraph to: No, not at all. We believe, on hindsight, that we could have built and operated the international satellite system with about \$140 million, \$60 million less than we raised in equity. But, we did not make a capital distribution because we knew of the potential large cash requirements of the domestic, maritime and aeronautical satellite systems. Later, as the domestic and maritime satellite systems were financed out of available cash, we could also see the need for some debt for Satellite Business Systems and some of the new acquisitions.

for lack of ready money?

CR: No, I don't there was a limitation on I will get to it in a minute that provided a little of a problem, but as far as undertaking projects fortunately we had the wherewithall to do what was necessary. I think we were judicious and just not going out spending it.^{36/} There was enough available to undertake any project that operationally or technically we felt was needed.^{37/}

There was one occasion when the FCC got into the act that provided a little bit of a problem, but [it was] not insurmountable. When we started COMSTAR in '73 and MARISAT, we did it out of the general funds of COMSAT and then there was a strong view that we should organizationally separate our domestic activities and the MARITIME was consider domestic because it was and all US system at that time.^{38/} That we

36/ change to: No, I don't think any real business opportunity was ever lost for lack of financing.

37/ delete: There was enough available to undertake any project that operationally or technically we felt was needed.

38/ change to: When we started COMSTAR and MARISAT in seventy-three, we did it out of the general funds of COMSAT. Then the FCC decided that we should

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should separate them from the international, so we established COMSAT GENERAL.^{39/} I think, that was about 1975 and therefore we had to with separate accounts.^{40/} In order to keep a separate balance sheet we had to arrange for the transfer of funds.^{41/} Now the FCC controlled that very carefully -- the transfer of money into COMSAT GENERAL -- and we had to first of all, we had about fifty million dollars invested.^{42/} By the time we separated the organization so that was transferred in kind and became the initial investment

(Continued from page 14)

- 38/ organizationally separate our domestic from our international activities. The MARITIME system was considered domestic because it was an all-U.S. owned and used system at that time.
- 39/ delete: That we should separate them from the international, so we established COMSAT GENERAL.
- 40/ change to: So COMSAT GENERAL was created to manage all the non-international programs. I think that was in 1975, and we also had to separate accounts.
- 41/ change to: In order to keep a separate balance sheet, we had to transfer property and funds from COMSAT to COMSAT GENERAL.
- 42/ change to: The FCC watched those transfers very carefully. We had about fifty-million dollars invested in the domestic and maritime systems at the time, so that was transferred and became the initial investment in COMSAT GENERAL.

in COMSAT GENERAL.^{43/} As we wanted to put additional money in COMSAT GENERAL (1) we had to convince the FCC that we had retained enough money in COMSAT so that we would not jeopardize the going forward with and liability of the international system, so they wanted that assurance.^{44/} So we had to take the next fifty million dollars we got approval for to shift over to COMSAT GENERAL and then another fifty and finally as I recall around a hundred and fifty million invested both in what we had initially and additional cash investment. And they were building satellites and paying NASA for launching and so forth out of COMSAT GENERAL funds.^{45/} We wanted to put another fifty million in and they put a restriction. They say, well part of it we can put in as equity and part should be a loan to them, an advance of some thirty-five million as I

43/ delete: By the time we separated the organization so that was transferred in time and became the initial investment in COMSAT GENERAL.

44/ change to: As we wanted to transfer additional funds to COMSAT GENERAL, we had to convince the FCC that we had sufficient money in COMSAT to continue the development and viability of the international system.

45/ change to: We obtained several successive approvals for additional transfers which increased the investment to \$150 million. With these additional funds, COMSAT GENERAL was paying satellite contractors, progress payments on NASA launches and normal operating expenses.

recall of the last fifty was advance.^{46/} Then, they said, "That's it. If COMSAT GENERAL needs any more money they should go out on their own, in their own name, with not with the capability and resort to the assets of COMSAT itself, borrow money in its own name for anything further they need.^{47/} And they did that, they established a line of credit, I think about fifty million dollars over and above the two hundred million equity that we had in and drew down maybe as much as forty of that but then the cash flow started coming from their systems and it paid off.^{48/}

Well, with all of that we had cash was had sort of reached a low end, maybe about twenty million dollars which we figure was about what we needed for just a monthly variations and with

46/ change to: Then, we wanted to invest another fifty million and the FCC said part of the funds had to be treated as debt, not equity. So, some thirty-five million of the final investment was looked by COMSAT as an advance and by COMSAT GENERAL as debt.

47/ delete: Borrow money in its own name for anything further they need.

48/ change to: COMSAT GENERAL did need more money, so they did that. They established a line of credit of, I think about fifty million dollars over and above the two hundred million capital that we had invested. They drew down maybe as much as forty of that but then the cash flow started as the two systems began operating, and COMSAT GENERAL paid off their bank loans.

the cash flow then coming from the international system and there wasn't too much going into INTELSAT at the time, cash started to build up.^{49/} So, in 1978 we went out and bought back from the market, around seventy-five million dollars we paid to buy two million shares of the stock back and take it in as treasury stock;^{50/} which in away was a sort of a capital distribution but that was in '78. So at the time we couldn't foresee what we were going to be using the money for, we were already in SBS, but we didn't have anything like STC going, we had not started our acquisitions like, well AMPLICA and ERT and so forth.^{51/} So, not knowing what to do with the money we figured that was a good way to handle it. And we did and after that as we treated things from cash flow but, then we had to

49/ change to: Well, with all of that financing, COMSAT itself reached a low of about twenty million dollars, which we figured was about what we needed for monthly operations. There wasn't much new INTELSAT investment at the time and cash started to buildup with the cash flow then coming from the international system.

50/ change to: So, in 1978 we made a tender offer for two million shares of our outstanding stock. The full quota was tendered, and we took the shares in as treasury stock.

51/ change to: In a way, this was a capital distribution of \$75 million. That was in seventy-eight, and at the time we didn't foresee any immediate need for the funds. We were already in SBS, but we didn't have anything like STC going and we had not started with acquisitions.

start borrowing money to make some of our [acquisitions].

TMS: To back up for just a second; to name names, who do you think was largely responsible for the conservatism? Were there certain Board members that you were aware of who really pressed for a conservative financial strategy? Were there certain Board members who disagreed? Well if you want too, we can even talk about officers in the corporation as well.

CR: Well, as I said, up until about 1977, I handled and I was a key person in the international side, working with INTELSAT and the arrangements and so forth.^{52/} The business of raising money and the portfolio and so forth was really handled by predecessors of mine as financial Vice President. The first of these, of course well when I joined COMSAT, Lew Meyer had the title of Finance Coordinator; he wasn't a Vice President, but the title of Finance Coordinator.^{53/} Later on, about late '65, Bruce Matthews came in as Vice President of

52/ change to: Well, as I said, up until about 1977, my responsibility was only the international side, working with INTELSAT and the international arrangements.

53/ change to: When I joined COMSAT, Lew Meyer had the title of Finance Coordinator and was the senior financial and procurement person.

Finance. He came from an accounting firm. Lew Meyer moved over and took the procurement side of things. So, Bruce was Vice President of Finance for about five years. I think he left about 1970, to go with another firm. Then after a short while Joe O'Conner was acting and then Jim McTernan came in as Financial Vice President. He was there until about 1976, about six years.

They dealt with the Board. I didn't, so I'm going to say something, but I don't understand this sort of hearsay.^{54/}

TMS: Okay.

CR: In those early years and up through maybe '73 or so forth Mr. Donner, who had been Chairman of General Motors -- Fred Donner -- was a member of the Board and he had a heavy financial background in General Motors before he became [GM's] Chairman. I was led to believe by first [Bruce] Matthews and also by Jim McTernan that he was very conservative -- Donner. A lot of the Board members I think, because of his preeminence in the financial area, accepted his advice on those things.

^{54/} change to: I didn't attend meetings or have any direct relations with the Board or Directors, so my comments are based on impressions gained from my bosses.

So, I don't know of anyone that was posed, but I definitely had the impression that he was the one that set the tone for the investigation.^{55/}

TMS: For instance, at that time, there were series one and series two directors. Series two directors had heavy backgrounds in communications in that particular industry, but there was no sign that perhaps that they thought this was detrimental to starting up in the communications field. I mean their background might not have been finance, but they knew the particular industry in which COMSAT would function.^{56/}

CR: Thats true, very good point.

CR: I [inaudible] Jim Dingman from AT&T and so forth.^{57/}

Yes, that's very I don't know though that they opposed it.^{58/} I think that you know, they were from AT&T, IT&T,

55/ change to: There were other Directors with financial backgrounds, and they all agreed that they wanted to be particularly careful with the shareholding.

56/ change to: Series two directors were elected by the communications companies that held 50% of our stock.

57/ delete: Jim Dingman from AT&T and so forth.

58/ change to: Yes, that's very I don't know that they opposed it.

Hawaiian Telephone and companies like that, which, of course, all did have debt structure^{59/}-- forty, fifty percent of their total capital structure. On the other hand, COMSAT was different and that it was just starting and many times during the FCC rate case we had to fall back on the fact that we were just starting up, we had no income.^{60/} You know, normally when you have you kind of build up gradually, and so forth I'm getting a little away from that direct subject, but on our rates, you know if we had set rates initially to cover all our costs, my God we wouldn't have sold any circuits.^{61/} So, we took the approach that we were going to try over a period of five years to get what we felt we deserved in the way of return, recognizing with a level rate which meant we had to try and anticipate what our traffic was going to be and be fairly accurate in that. Most companies, although they started sometime, but they in the thirties when the big regulation period came they were all going companies and they didn't had

59/ delete: structure

60/ add: to support a debt structure

61/ change to: Normally, you have to build up revenues gradually, I'm getting a little away from that direct subject--but if we had to set rates initially to cover all our cost we wouldn't have sold any circuits in competition with cables.

to go through the very something we did.^{62/}

TMS: Let's shift gears a little bit. You were most closely involved early on in international finance -- what is today COMSAT World Systems. Can you talk a little bit about the particular challenges, especially when INTELSAT was just starting up and going into the period when the definitive arrangements were worked out of financing INTELSAT with the cooperation of foreign entities, let's call them, whether the private or public concerns?

CR: Well, yes it was a very interesting and rewarding and difficult experience. The thing I look back on as my greatest contribution: When I came in early July of 1964, they said Lew Meyer was the Finance Coordinator and I had known him before and he knew my background, he assigned me to work the

^{62/} change to: So, we took the approach that we were going to try over a period of five years to get what we felt we deserved in the way of return. That meant losses in the early years and profits in the later years. Using a level rate meant we had to anticipate our circuit demand with reasonable accuracy. Although all companies had to start sometime, practically all of the communications companies were already fairly large in the thirties when the big regulation period began. They were all going companies and they didn't have to go through the build up period under regulation that we did.

international side of things and I was virtually the only one doing it at the time.^{63/} Because it did not yet have the Interim Arrangements.^{64/} The Interim Arrangements were signed shortly after I joined, I forgot, it might have been like July 19, and I think I joined around July 5th of 1964.^{65/} I heard it said, at that time, that one of the reasons that the Europeans were now so anxious to sign the agreements -- even though they were interim agreements -- was the fact that COMSAT now they had the financial wherewithall to go ahead and do the system themselves.^{66/} They didn't want to be they wanted to be part of the system and have their share of the say and so forth.^{67/} So, I don't know, I think it takes time to

63/ add: with his supervision and consultation, of course.

64/ delete: Because it did not yet have the Interim Arrangements.

65/ change to: The first international agreements, the Interim Arrangements, were signed shortly after I joined; I believe that was July 19, and I joined on July 5, 1964.

66/ change to: I heard it said, at that time, that one of the reasons that the Europeans were so anxious to sign the Interim agreements was the fact that COMSAT now had the knowledge and financial resources to go ahead and build the satellite system itself.

67/ change to: The other countries did not want a totally U.S.-owned system; they wanted to be part of the system and have their share of the management.

work those things out . I don't know how actually this strong this point was, but I feel certain that I had made some contribution to getting final agreement and getting things out.^{68/} The agreement then, the Interim Agreement, came into effect sometime late in August, I think, 21 August 1964.

I think the first meeting of the Interim Committee, which was the governing body, was in September, 1964. There were a lot of things to be worked out there really was. We looked around at the time to try to see whether was any parallel anywhere that we could find and there just wasn't any.^{69/} There were certain international corporations but they were governed in a different way. They weren't partnerships and this was clearly a partnership. So, we had to figure out ways to bill the signatories for their share of expenditures.^{70/}

68/ delete: So, I don't know, think, I think it takes time to work those things out but I and I don't know how actually this strong this point was but I feel certain that I had made some contribution to getting final agreement and getting things out.

69/ change to: There were a lot of financial policies and procedures to be worked out. We looked around at the time to see whether there were international organizations with similar arrangements, but there weren't any.

70/ change to: Among the first things we had to do was to bill the signatures for their share of expenditures.

We had to decide how often we wanted to bill them, monthly, quarterly, we went monthly and it's still monthly. Many of the things that were developed in that first year or two are still in existence now and haven't been changed. Partly because its difficult to change them once they are established. But I think there was merit in the procedures that were set up and they've just survived. I was very closely involved from COMSAT's standpoint, and headed with, of course, review by Lew Meyer or later Bruce Matthews when he was Financial Vice President, of whatever we did. I don't want to imply that we^{71/} did it all alone because we had a very active Finance Committee, that was a subcommittee of the Interim Committee. It was headed by Reg Westlake who is still with INTELSAT. He was in the UK and well, I think, while most of the things we set up and recommended to the Finance Committee, he particularly was very helpful in suggesting modifications or where there were trouble areas and so forth then because he had a lot of experience in telecommunications itself.^{72/}

71/ change "we" to "COMSAT"

72/ change to: He was the U.K. member of the subcommittee. Most of the proposals came from COMSAT, as manager of the system, to the Finance Committee. Reg Westlake and other committee members were very helpful in suggesting

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He was with the British Post Office on the telecommunications side. So, there were a lot things to be worked out, many of them requiring decisions by the Interim Committee. I think I always felt fairly comfortable that they [the Interim Committee] had confidence in COMSAT, [and] me and Reg Westlake, because our normal path was to have things reviewed by the Finance Committee and then take them to the Interim Committee for approval.

But, there major things that had to be decided, I remember one very big thing was what kind of rate of return should we figure in our rates.^{73/} We had on one hand a group that felt, "No rate of return." Just make this a non-profit organization and each person gets out their own service But we didn't^{74/}

(Continued from page 26)

- 72/ modifications because most of them had a lot of experience in international telecommunications.
- 73/ change to: They usually accepted our recommendations. I remember one very big policy matter was what rate of return should be used in calculating charges for use of circuits.
- 74/ change to: We had on one hand the view that there should be no profit; just let each signatory pay its share of expenses and don't charge for use.

TMS: Who was that, what group was that in particularly?

CR: Well, that was Dr. Steiner from Switzerland was the main [proponent of that idea].

TMS: What was his rationale for making it non-profit?

CR: Well, I think there was a little, it may been some interest in getting Russia to join the system.^{75/} I think, I never heard him say this, but I always felt it. On one occasion during the definitive arrangements conference later in 1970 or so, I talked with a Russian group, they wanted to talk to somebody in the finance side.^{76/}

TMS: They sat as observers as I recall.^{77/}

^{75/} change to: Well, I think there may been some interest in getting more countries to join in the arrangements.

^{76/} change to: Later, at the time of the meetings on the permanent arrangements in 1970, I talked with a Russian group, they wanted to talk to somebody on the finance side.

^{77/} change to: They were at the meetings at the State Department as observers.

CR: Yes and I recall having a meeting with a group just to sort of go and brief them. One thing, I recall that they noted was that it's, you know, a for-profit system which I gather, is something just by their nature of their system they don't like.^{78/} Whether it was that, or whether there was something deeper, I don't know.

But we recognized from the very beginning that always going to be some fairly wide

^{78/} change to: I recall concern about INTELSAT being a profit rather than a non-profit system.

discrepancies between ownership and use.^{79/} It wasn't fair for somebody to own we started out owning 61 percent.^{80/} To own 61 percent, pay all the bills, and so forth and use maybe 40 percent of the system. So that if you are going to invest your money you should get some return on the part that you have in that is being used by somebody else.^{81/} So, we really insisted and the Interim Agreements provided, for the argument was that [inaudible] for a rate of return but his argument was -- Steiner -- that the rate of return could be nil; that's a rate of return. So, we argued for twenty percent and we were, of course, a little bit, well almost unique in there, we were the only signature that had a tax problem. If we made profit, we had to pay forty-six percent of it or fifty percent of the tax to somebody else, so that we only had the

79/ change to: Even though ownership was to be adjusted annually to match percentage of use, we recognized from the very beginning that always going to be some fairly wide differences between ownership and use.

80/ delete: It wasn't fair for somebody to own, we started out owning 61 percent.

81/ delete: To own 61 percent, pay all the bills, and so forth and use maybe 40 percent of the system. So that if you are going to invest your money, you should get some return on the part that you have in that is being used by somebody else.

residual, so we were looking for like twenty percent pre-tax and ten percent after tax.^{82/}

Well, that didn't sell because everybody else virtually was a government entity, they wanted profit. Excuse me, I think another reason maybe for a no profit was because a lot of them were governmental agencies.^{83/} Although, the UK and certainly, the commonwealth countries operated as separate entities,^{84/} they made a profit and maybe they didn't have a tax, but they paid in lieu of taxes in a lot of cases.^{85/}

^{82/} change to: The U.S. initially owned 61 percent of the system. To pay 61 percent of the bills and use only about 40 percent of the system just wouldn't be fair. Our view was that we should get some return on our portion of the system that was being used by somebody else. The Interim Agreements stated that there should be a return, but Dr. Steiner's argument was that the Interim Committee could decide that the return should be nil. COMSAT argued for a 20 percent return on the investment. Since any return that we could earn would be taxed about 50 percent, between federal and state taxes, that would leave us about 10 percent--a reasonable rate of return.

^{83/} delete: Well, that didn't sell because everybody else virtually was a government entities, they wanted a profit, excuse me, I think another reason maybe for a no profit was because a lot of them were governmental agencies.

^{84/} delete: Although, UK and certainly, the commonwealth countries operated as separate entities.

^{85/} change to: Well, that didn't sell because many of the other signatories were government entities and paid no
(Continued on page 32)

So, anyway after a long torturous argument in the Board of Governors, they ended up with fourteen percent and that's persisted all through the years.^{86/} Fourteen percent [thus became] the targeted rate of return.

Another big concern was what should the initial rate be for using the charge for using the system.^{87/} There were long discussions and arguments over that. We wanted it low and recognize it might take five, six, seven years to break even and get back on an even keel. But we wanted it low because we had to compete with cables and we wanted to be able to set rates that were reasonable.^{88/} So, when the Early Bird went up in 1965, we set an initial rate which was thirty-two

(Continued from page 31)

- 85/ taxes. The Commonwealth countries were somewhat sympathetic to the U.S. position because, although their companies were government owned, they did pay a percentage of profits as an amount in lieu of taxes.
- 86/ change to: Anyway, after a long discussion, The Interim Committee decided on a rate of return of 14 percent and that's persisted through the years.
- 87/ change to: Another major policy decision was the initial utilization rate to be charged for using the system.
- 88/ change to: The U.S. wanted a low charge, and recognized that it might take five, six, or seven years to breakeven, because we knew that INTELSAT had to compete with cables and we wanted to be able to set rates that were competitive.

thousand per year for a half circuit.^{89/} I guess, you know why it's a half circuit, because it's two sides.^{90/} So, we accepted that reluctantly and wanted more studies done and then at the beginning of 1966, we went to twenty thousand per year after a lot pressure from US. ^{91/}

TMS: Let me ask the same question about the rates that I did about the rate of return: that is, who were the chief opponents to COMSAT, the U.S. position, and what were the arguments they brought forward?

CR: Well, I think, if I recall, I think the commonwealth countries favored the higher charge. Now, they had, they were wearing two hats recall, because in all their cases they were

^{89/} change to: So, when the Earlybird went up in 1965, the Interim Committee set an initial rate of \$32,000 per year for a half circuit.

^{90/} change to: The charge was based on a half circuit so that each using signatory paid for its end of the circuit.

^{91/} change to: The U.S. accepted that rate reluctantly and wanted more studies done. At the beginning of 1966, the Interim Committee reduced the rate to \$20,000 per half circuit per year after a lot of pressure from the U.S.

both the cable owner and the satellite.^{92/} While they wanted to strike a balance between the satellites and cables they could do it, you know, within their own resources.^{93/} With us it was satellites that were our mode, so, I think they tended to favor higher rates.^{94/} I think the countries too that were not going to be users initially favored the higher rates, because as investors they would recover their costs more rapidly and that was better than doing it more slowly.^{95/} TMS: So, for instance, developing countries or developed countries in say the Pacific Basin, since that didn't get immediate attention, or along the Indian Ocean or someplace like, Africa, would have favored the higher rate.^{96/}

92/ change to: But, they were wearing two hats, because their signatories all owned cables as well as part of the INTELSAT system.

93/ change "resources" to "accounts"

94/ change to: But COMSAT did not own cables and wanted a more reasonable charge.

95/ change to: Also, the many small countries that were not going to be users initially tended to favor higher rates, because as investors they would recover their investment more rapidly.

96/ change to: Also, countries around the Pacific Basin and in the Indian Ocean area could not get service initially, so they would have favored the higher rate.

CR: Yes.

TMS: Okay

CR: I think those were the two main reasons for favoring the higher rate. And then after keeping that twenty thousand a year for about three years perhaps, then we started on a very happy situation of being able to reduce the rate year by year for many years; although the last few years they've had to carry it for a couple of years at a time before they reduce it again. The cost of new satellites, even though they have much higher capacity is, the cost of satellites is just so great that they have to do that.^{97/} Well, its sort of [inaudible] too you can't forever keep going down.^{98/}

TMS: Can you recall one negotiation that was particularly

^{97/} change to: After using a utilization charge of \$20,000 a year for about three years, INTELSAT started on a very happy trend of reducing rates each year for a long time. During the last few years, the same rate had to be continued for several years because of the high cost of new satellites. Even though many more circuits are being used, satellites are costing much more to build and launch.

^{98/} delete: They have to do that. Well, it's sort of [inaudible] too you can't forever keep going down.

difficult in some detail; something that whether it was the rate or the rate of return or one thing that was particularly difficult getting worked out?

TMS: Well, yes I perhaps someone else, it may not all that large or significant a matter. But we, COMSAT had, even before my time, several months before I joined, had entered into a contract with Hughes Aircraft to build the Early Bird satellites.^{99/} We were going to do it regardless.^{100/} We had incurred costs in planning an international system for a year and a half before INTELSAT was ever formed and we felt we were entitle to recovery of some of those costs. So, but admittedly, we had not kept any records and details of the company was growing rapidly. We really didn't have an controller until about a month before I joined and Fred Kneed became the controller and the accounting system was rather

^{99/} change to: Well, yes I recall one situation that was particularly difficult. COMSAT had, several months before I joined, entered into a contract with Hughes Aircraft to build the Earlybird satellites.

^{100/} delete: We were going to do it regardless.

elementary.^{101/} We certainly had no cost accounting system at all.^{102/} So, when it came time, I guess that at the first meeting of the Finance Subcommittee, we put in a claim, for what expenses we wanted to recover.^{103/} We arrived at this number, Lew Meyer and I arrived at the number. We added up all our costs to that point which I guess I recall -- aside from investments in the satellites, that was pretty clear that they had a share of that, they had to pay that share and that was all the investment. But expense-wise, we figure that about seventy-five percent -- and that was strictly off the top our head -- of the expenses had been in planning the international

^{101/} change to: Also, we had incurred the costs of planning an international system for a year and a half before INTELSAT was ever formed, and we felt we were entitled to recover a share of the cost of those efforts that would also benefit our new international partners. We had accounting records, of course, but not the detailed cost accounting records that would enable us to provide a lot of supporting detail. We didn't have a Comptroller until a month or two before I joined COMSAT.

^{102/} delete: We had certainly had no cost to accounting system at all.

^{103/} change to: So, at the first meeting of the Finance Subcommittee, we put in a claim for the expenses we wanted to recover.

system.^{104/} Well, that ran into all sorts of flack. It was probably the one thing on which Reg Westlake and I most widely disagreed. But...

TMS: Why did they disagree? Was it the lack of documentation?

CR:lack of documentation and they knew we had acknowledged that it was our best estimate in support [inaudible].^{105/} They insisted and we didn't really fight the problem. Now we go back and survey people and at least get the benefit of individual judgments.^{106/} But, it obviously, involved are very complex definition, because they had their

^{104/} change to: Lew Meyer and I arrived at the amount of taking 75 percent of our expenses to date, excluding Corporate costs such as shareholder expenses, Corporate Secretary, etc. It was our judgement that most of what we had done was for the international system. About 25 percent of those efforts would be analogous to costs other signatories might also incur to participate in INTELSAT intelligently. Also, they had spent large sums on pre-INTELSAT meetings on their own behalf.

^{105/} change to: Basically, lack of documentation. We had acknowledged from the beginning that it was our best estimate so it was fair game.

^{106/} change to: The Finance Subcommittee insisted that we go back and survey all the employees involved to get their individual judgement as to the percent that would benefit INTELSAT.

own expenses -- there had been, I don't know, four or five meetings before the Interim Agreements to discuss the nature of the Agreements and so forth. And the US had sent people, COMSAT had sent people. So they said, "Now look, we had those expenses ourselves so we don't want those in any part of what we pay."^{107/} You're planning your own earth stations and that we have earth station costs of our own, we don't want any of those.^{108/} So, we had to come with a fairly complex definition and go around to the people, oh, there weren't too many people [inaudible].^{109/} [A few had been] hired and a few had left by that time.^{110/} and get their view of how much of their worked had fit this part of the definition and how much that fit that. And, I believe we ended up with something like sixty-six percent instead of seventy-five.

^{107/} change to: This involved briefing people on a very complex definition applied retroactively to their efforts over one-and-one-half years.

^{108/} delete: You're planning your own earth stations and that we have our station cost of our own we don't want any of these.

^{109/} change to: There were about a hundred staff personnel involved.

^{110/} delete: Hired and a few had left by that time.

TMS: Okay, Now, that was sixty-six percent?

CR: I think the number we came up with was like sixty-six percent of cost.^{111/} We weren't all that far off, but they felt better with having, I think, challenge us on our first assertion and we did that, as an aside, we did from that point on and instituted a system of people identifying their time spent on various activities, so we most professional organizations don't have their staff people keep time cards and so forth, but we did largely for the cost accounting aspects.^{112/} Of course, they still do.^{113/}

TMS: Just to think in general for a moment. Would you say that from your perspective on the Financial Subcommittee that in the early years COMSAT's relationships with the various members of INTELSAT or with the body of INTELSAT, in general,

^{111/} change to: I think the number we came up with was about sixty-six percent of our non-Corporate costs.

^{112/} change to: We weren't all that far off from our original estimate, but they felt better with having challenged our first assertion. From that time on we instituted a cost accounting system under which all personnel, including professionals, recorded their time on various tasks. That system is still in use.

^{113/} delete: Of course, they still do.

was cordial and cooperative? Some people have made the assertion that it was essentially an adversarial relationship. CR: No, I never felt that way, and I think if you ask people to maybe differentiate technical and operational and political aspects from financial, I think that most people would agree that financial was rather smooth. I don't know, I don't want to pat myself on the back, but I think it was largely due the personality of Reg Westlake who has always sort of been the devil's advocate in these things and my own personality and I think both of us wanted to be fair and willing to accept criticism and make adjustments. It went both ways, most cases we (COMSAT) would take initiative and then, you know, discuss the things and an approach in the Finance Committee.^{114/} I think it went very smoothly. I would always look forward to the Finance Committee meetings. It had normally one associated with each Board of Governors of Interim Committee meeting, it

^{114/} change to: No, I never felt that way. I can speak only about the financial aspects, but I think most people would agree that financial relationships were fairly smooth. I don't want to pat myself on the back, but I think it was largely due to the personalities of Reg Westlake and myself. I think both of us wanted to be fair; we were willing to accept criticism and make adjustments so it went both ways. In most cases we (COMSAT) would take the initiative in making a proposal and then discuss, and adjust as necessary in the Finance Committee.

preceded it by a day or two. I always looked forward to it. It was a very congenial group, we had some excellent finance people with good experience, particularly from the Commonwealth -- Canada, Australia, UK -- and also Italy and Scandinavia rotated -- Norway, Sweden and Denmark -- rotated membership and the Japanese were not very active, but certainly following everything very, very closely.^{115/}

TMS: Was there a gadfly on the Committee, somebody who, and I don't mean that in a perjorative sense, but someone who would kind of take it upon themselves to criticize or point out difficulties for the sake of helping debate.

CR: Well, Dr. Steiner, who I mentioned before, was a Swiss representative, he was resident in Washington, so in contrast to most the other representatives on the Interim Committee, later the Board of Governors, who worked in their own organization and came here for the meetings, he had time to be

^{115/} change to: I always looked forward to the Finance Committee meetings. They normally were held a few days before each Interim Committee or Board of Governor's meeting. We had some excellent finance people with good experience, particularly from the U.K., Canada, Australia, Italy, and Japan.

here full time and he also had time to participate as their representative on each of the subcommittees, because you were not limited to any, any member of the Interim Committee that wanted to send somebody to the subcommittee could do so.^{116/}

TMS: Busy man.

CR: So, he attended all of them. Of course, they were, because of the translation problem -- simultaneous translation -- they were not scheduled simultaneously, normally were not.^{117/} We did have a few conflicts later on.^{118/} So, he

^{116/} change to: Well, Dr. Steiner, who I mentioned before, was the Swiss member of the Finance Subcommittee and of the Interim Committee. He was resident in Washington, so in contrast to most other representatives on the Interim Committee, later the Board of Governors, who worked in their own organization and came here for the meetings, he was here full time. He also had time to participate as the Swiss representative on Technical as well as the finance subcommittees. Subcommittee representation was open, so that any member of the Interim Committee that wanted to have a representative on a sub-committee could do so.

^{117/} change to: Dr. Steiner attended all the meetings. Of course, because of scarcity of translator staff and the need for simultaneous translation even at subcommittee meetings, meetings were not held concurrently.

^{118/} delete: We did have a few conflicts later on.

was able to attend the technical, finance and so forth.^{119/}
He was smart, he was a very sharp guy and but he didn't, he
always, I think felt COMSAT was trying to pull something.
While I think he had respect for me and we got along well
personally, he just didn't quite trust COMSAT, he thought we
were trying to control INTELSAT, so forth.^{120/}

TMS: Can you figure out any reason for that? I would expect
that perhaps from a socialist country or something like that,
that might distrust the motives of essentially a private
corporation, but it seems to me that Dr. Steiner ought to have
been relatively comfortable with the notion of COMSAT
representing U.S. interests and participating in INTELSAT?

CR: Yes, I don't know, he and John Johnson, who was our
representative and Chairman of the Interim Committee for a
number of years, had a lot of personal conflicts and that may

^{119/} delete: So, he was able to attend the technical, finance
and so forth.

^{120/} change to: He was very intelligent and generally had
good points to make, but he always seemed to feel that
COMSAT had some ulterior motive. I think he had respect
for me and we got along well personally. He just didn't
quite trust COMSAT. He thought we were trying to
exercise too tight a control on INTELSAT.

have been and it may have stemmed from that, I don't know.^{121/} He had been, I think, he had worked for some US company prior to going to work for the Swedish PTT and had taken this job, so that he had had some experience over here. He had been resident here, in fact, I think he married a American girl and later they were divorced and then he married another, although I don't think she was American, but he married her here.^{122/} But, no, I don't know of any particular reason, and I seem, of course, he hasn't been associated with INTELSAT for a number of years, I remember when he left Washington, he had gave a big farewell party and I was the one he invited.^{123/} He always, he and I always got along well. We had one big set-to, we had done a tremendously complex calculation for a Finance Subcommittee meeting and got to the meeting and he insisted that it had to be redone -- the assumptions changed and redone

^{121/} change to: Yes, but he and John Johnson, who was our representative and was Chairman of the Interim Committee for a number of years seemed to have a lot of disagreements.

^{122/} change to: Dr. Steiner had worked for some U.S. company, prior to going to work for the Swiss PTT as their representative to INTELSAT.

^{123/} change to: I don't know of any particular reason for his distrust of COMSAT. He has not associated with INTELSAT for a number of years.

before he would consider it. He wanted it done by the next day, or something like that. Well, we were in the habit of working all hours, but this just was not possible. So, I said it couldn't be done and he, at lunch time he went back to the Swiss Ambassador, who called the State Department; the State Department called Dr. Charyk or somebody and said we were refusing to do something. So Bruce Matthews, he went back to the meeting after lunch and said clearly we would do it but we couldn't to do it for the next day. So what they did was schedule another meeting a week later. That was the only untoward incident I ever had with Steiner, and that was fairly early on and as I say in general, we got along quite well.

TMS: That's very interesting. Well, let's shift gears a bit. We've been talking a little bit about COMSAT's portfolio strategy, the general financial status of the company early on, and then talking a little bit about your recollections of finance with INTELSAT. Let's focus now on COMSAT, in particular these questions that I gave you for your consideration earlier. I've got a number of things that have to do with COMSAT's business -- it's competitive stature -- in its particular industry. Now certainly early on when COMSAT

was the only company in satellite telecommunications, competition had a very particular meaning -- you had competing technology certainly in cable, but no direct competition from other companies. In that case, competition might take on the shape of, well competing technologies, the strength of your buyers and your suppliers, and say the potential for new entrants in the field. Can you reflect a little bit on competition for COMSAT in the early years? How it shaped the company? How it shaped its strategies for profiting and flourishing as a company?

CR: Of course, as you say, we were the monopoly, I think the competition was more of a technical nature and we were concerned, I think about quality -- very concerned -- from a market standpoint of having quality.^{124/} Not only good communications, we had four KC circuits against three KC in cables,^{125/} but also, reliability, we were very concerned

^{124/} change to: As you say we had the U.S. monopoly on satellite communications. The competition was mostly of a technical nature related to the quality and reliability of cable versus satellite circuits.

^{125/} change to: While we had 4 KC channels versus the 3 KC channels in cables, we were concerned for sometime about the slight delay associated with the distance to the satellite and back to the ground.

and a lot of the internal reports focused on, we weren't too sure how much downtime we'd have because of not only satellite interruptions but earth station or land line interruptions.^{126/} So, that there was a lot of attention to that and cables, of course, are very reliable in that regard and we had to be extremely careful that reliability and quality were high. We weren't too concerned about costs.^{127/} I recall a number of times I was asked and did work on it -- on comparing cable costs with satellite costs -- and it was very difficult to get an apples to apples comparison, because they are point-to-point, they don't provide, for example, television and we had so many, so many it was a period of lifetime was quite different and so forth.^{128/} But, as near as we could tell and I always felt convinced in my own mind and several times I ran through the rationale I had for various people, that satellites were cheaper than cables. But, we

^{126/} change to: Also, we weren't too sure how much downtime we might have because of not only satellite interruptions but also earth station or land line interruptions.

^{127/} change to: We weren't too concerned about relative costs.

^{128/} change to: I made a number of comparisons between cable and satellite costs. It was very difficult to get a good comparison, because of the vast differences in expected lifetimes, coverage, capacity, types of services, etc.

never, I don't think the company as a whole really felt very concerned about cost, particularly when we were able to start reducing our rates and when you reduce your rates that's just comforting to know that's happening and perhaps the rate of reduction which, by the way was rather steep, also isn't too much in consideration.^{129/} I don't think people, not perhaps outside of finance, were really too concerned about competition from a cost standpoint; they were, as I say, particularly [concerned] about quality and reliability.^{130/} We knew that the, of course, the overall market was a matter of primarily of minutes of message service that AT&T had to get overseas and there seemed to be a fairly even pattern of growth there.^{131/}

^{129/} change to: But, I always felt convinced in my own mind that satellite circuits were cheaper than cable circuits. I don't think COMSAT management really felt very concerned about cost, particularly when we were able to start reducing our charges very early and to achieve charge levels below those that the carriers were charging for cable circuits.

^{130/} delete: I don't think people, not perhaps outside of finance, were really too concerned about competition from a cost standpoint; they were, as I say, particularly [concerned] about quality and reliability.

^{131/} change to: We knew that our overall market limit was a matter primarily of the number of leased circuits and minutes of message service provided to customers by AT&T and the record carriers. The growth of such international service seemed to be fairly constant.

We were very concerned about having some sort of equitable split between cable and satellite [circuits] on that and convinced the FCC that this is something they should watch and monitor which they did and in fact, actually set up the allocations because we pointed out the natural tendency for somebody who owns cables would be fill out the cables.^{132/} This was not consistent with developing a worldwide system and that you know, we could build satellites with one station let's say in France and another station in Rhode Island that could pass all kind of traffic at a very low cost; but that didn't help the world system at all.^{133/} So, they recognized that early on and from the very beginning got into the allocation formula which was, of course, very helpful to COMSAT because generally, they figured they would authorized a new cable and then they sort of let them fill it at a certain rate and then went for when next cable went in so that they normally was almost, not quite a straight line growth, perhaps, but fairly

^{132/} change to: The FCC set up an allocation target and procedures because the natural tendency of cable owners would be to fill up their cables.

^{133/} change to: This would not be consistent with developing a worldwide communications satellite system to connect points that did not have ready access to cables.

close to it.^{134/}

TMS: What about the competition, well this aspect of competition -- the strength of the buyers of COMSAT services? It goes without saying that COMSAT's consumers, the international common carriers in this case, were in the position of unusual strength with COMSAT sitting on the Board as they did, being a very small group as they were, did that have any impact on COMSAT's ability to compete, to grow, to profit that you could see, at least?

CR: No, I never saw any hindrances or any problems that arose from that. I've been told, as I mentioned, I didn't go to the Board meetings until about '77, by that time all the all the carriers were long gone from the Board, but I am told that when certain things were discussed the carriers would just excuse themselves from the Board and recognize that there was a conflict of interest; just how those were defined, I don't know, but and I never observed it myself, but I understood that

^{134/} change to: The FCC deciding on circuit allocations was very helpful to COMSAT because they let the carriers fill new cables only at a rate consistent with their filling of satellites.

did happen that they were very careful about not getting into things, that where there was competition.^{135/}

TMS: Well, certainly if COMSAT had been able to sell its services to entities beyond the common carriers, the prospect of profit would have been much greater under the circumstances.

CR: Yes, of course, that didn't even, you know, the first break in that dike came when we could sell direct to the broadcaster on television and get away from this sort of ridiculous carrier of the week arrangement where the four of them took turns. So when you wanted to schedule a TV program for Christmas you had to figure out who was going to be carrier of the week and schedule it with that carrier and it was really ridiculous. So when we got, when was that I forgot, '78 or so authority to go to sell direct to the broadcasters that stopped that nonsense.^{136/} Of course, TV was the one, very

^{135/} change to: As I mentioned, I didn't go to the Board meetings until about 1977, and by that time, all of the Directors representing the carriers were off the Board.

^{136/} change to: Yes. The first break in that respect occurred when we were authorized by the FCC to sell television service direct to the broadcasters. That enabled the broadcasters to get away from the

(Continued on page 53)

significant service that the satellites can provide and that the cable could not, it would have used up too much capacity of the cable to use it for.....137/

TMS: How quickly did COMSAT try to develop international television?

CR: Oh, very quickly.138/

TMS: We see it one way in which satellites could really steal a march on cable if they wanted to.139/

CR: Yes, the first rate reduction, that we had came about in

(Continued from page 52)
136/ carrier-of-the-week arrangement, whereby the four international carriers took turns in providing television channels! Whenever a broadcaster wanted to schedule a T.V. program, he had to go to the carrier who would provide such service in that particular week. It was really an unnecessary arrangement, so in about 1978, we received authority to sell television service direct to the broadcasters.

137/ change to: TV was the one service that satellites could provide and the cables could not; television would have used up too much of the capacity of the cable to have a TV channel reserved for use at any time.

138/ add: starting in 1965.

139/ change to: We saw it as an important way to exploit the advantage of satellites.

1968, I believe, when we started Pacific service.^{140/} We adjusted our whole rate structure, and we made a significant reduction in television rates at that point to try to cultivate the television business.

TMS: Did it work?

CR: Yes. It wasn't quite, I think as trying to think of the percentages, it seems to me we were, we may have come close to cutting our TV rates in half, but I don't think quite double the number of hours.^{141/} But then, you know, its hard to pick a point in time because that just doesn't happen overnight, it takes a couple years, I think over a couple of years we did.^{142/}

TMS: Well, this kind of takes us to the issue of competitive

^{140/} change to: Our first rate reduction was in television charges. That occurred when we started service in the Pacific Ocean area.

^{141/} change to: As I recall, we cut our T.V. rate almost in half, and the number of hours of T.V. use went up dramatically.

^{142/} delete: But then, you know, its hard to pick a point and time because that just doesn't happen overnight, it takes a couple years, I think over a couple of years we did.

strategy that COMSAT used. One competitive strategy that COMSAT that I was thinking of would have been to emphasize those things that cable, for instance, couldn't do as well -- TV for instance; or the flexibility of satellites in assigning certain portions of its bandwidth to data or voice transmission, things of that sort. What kinds of strategies has COMSAT developed along the way, that you have been aware of?

CR: Well, other than, I guess the only thing I am aware of from the financial side, we did, as I said, reduce our TV rates significantly in '68 and then again around '72 time when there was a big discussion of another cable and we said, "Well we can really do this cheaper than a cable can." And the carriers said, "Well okay FCC, make them show us." So we reduced our rates at that point on the telephone circuits, too^{143/} to try to reduce them, to try to beat the cable

^{143/} change to: Well, the only thing I am aware of from the financial side was the significant reduction in 1968. Later on, around 1972, when there was a big discussion of another cable, we said we could provide communication services cheaper than a cable could. As a result, we reduced our rates at that point on television and on telephone and telegraph circuits, too.

competition.^{144/} I guess, the only things I know are from the financial side and they primary rate, rate approach to the thing.^{145/}

TMS: Did you say that...

CR: Excuse me. There were services we tried to provide. We I recall, when we got into fifty-six kilobites service and we had a lot of discussions in INTELSAT [about] what the rate should be. See because while their rates are only the partners, it still affected to how you distribute the money within the INTELSAT arena. So we were concerned about their rates and they, there was some feeling that well fifty-six kilobites should be maybe one point some fraction of the normal circuits cost. But we fought that strongly in INTELSAT and won that battle.^{146/} As a result, we came up with new types of

^{144/} delete: to try to reduce them, to try to beat the cable competition.

^{145/} change to: The only thing I really know about are from the financial side and they consisted primarily of trying to beat the competition by reducing rates.

^{146/} delete: There were services we tried to provide, we I recall, when we got into fifty-six kilobytes service and we had a lot of discussions in INTELSAT what the rate
(Continued on page 57)

service forty-eight, twenty-four, twelve kilobites service for a slower speed transmission. So I think we try to meet it with types of, you know, with service that they didn't.^{147/}

TMS: Well, let me ask one more quick question along this same line, and that is have the rates for the specialized services -- TV, data transfer -- been lower or reduced more quickly than the rates for regular voice transmission? Or, has it really been just kind of....

CR: I think they go pretty much hand and hand, although in '68 and sort of connection with our reduction of our COMSAT rates to the carriers, we pressed for a big reduction in the INTELSAT rates as well and succeeded. And I guess the opponents were successful so that for perhaps ten years after that, there was

(Continued from page 56)

^{146/} should be, see because while their rates are only the partners of a it still effected to how you distribute the money within the INTELSAT arena so we were concerned about their rates and they with some feeling that well fifty-six kilobytes should be maybe one point some fraction of the normal circuits cost, but we fouth that strongly in INTELSAT and won that battle.

^{147/} change to: We did develop some new types of service, such as, forty-eight, twenty-four, and twelve kilobytes for a slower speed data transmission, so there were new services offered as well.

not another reduction in TV rates, but it was down to like eight dollars a minutes, 8.75 a minute as I recall.^{148/}

TMS: This is for a TV circuit?

CR: For a TV [circuit] which is, of course, equivalent on maybe 240 voice channels for a minute.^{149/} So, it was very low and we acknowledged that but it was all in the interest of trying to get more, better use of the satellites and so forth and their interest and in our interest.^{150/} So as a result, though it was all figured so closely, that they didn't feel comfortable in reducing their TV charge for they have

^{148/} change to: I think that, except for the special T.V. reduction in 1968, that I mentioned, the COMSAT rate reductions were across the board, that is the same percentage reduction for all services. We also pressed for reductions in the INTELSAT rates and succeeded. The INTELSAT rate for television was reduced to \$8.75 per minute.

^{149/} change to: For a T.V. channel, which is equivalent to 240 voice channels for a minute.

^{150/} change to: So, the charge was very low, but it was all in the interest of trying to get more use of the satellites.

since done so.^{151/} That was about ten years, I think before that.

^{151/} change to: That low rate was figured so closely, that INTELSAT didn't feel comfortable in reducing the T.V. charge for about ten years.

But at the same time voice was going down year by year.^{152/}
When we -- in our domestic rates -- when we went through the
rate reductions starting with the end of the rate case in '75,
we always reduced the same proportion.^{153/} It was not based
exactly on cost analysis that we did that, except in overall
sense, but not differentiate service in cost, but just because
we knew if we didn't reduce, then the broadcasters would be in
complaining to FCC. The most logical approach seemed to be
same percentage reduction along both sides.^{154/}

TMS: We've been talking a lot about specialized services, and
that brings to mind the various ways in which satellites can be
used for the various kinds of expertise that a company that
works with satellites can develop and sell as services. That
brings us to the issue of COMSAT's diversification. COMSAT has
grown a lot over the years and the process has been, you know,
in part a matter of internal development and to a somewhat
lesser extent a matter of acquisition. You, I think, would
have been in a good position to say, how COMSAT targeted areas

^{152/} change to: However, during that period, charges for
voice channels were reduced year by year.

^{153/} change to: When we went through our COMSAT rate
reductions starting with the end of the rate case in
1975, we reduced all rates in the same proportions.

^{154/} change to: Allocation of costs to various services is
very judgemental, so the most logical approach seemed to
be the same percentage reduction across the board.

or industries to enter? How it decided what would be good to do with satellites or what kind of technical services we should offer to clients? How did COMSAT go about doing this, and how did the diversification in general affect COMSAT's stature in the marketplace?

CR: I don't know looking at the stock today, it seems to have affected it adversely. Also, that article just this morning, did you see that?^{155/}

TMS: Yes.

CR: Well, I don't know if there was any, you know, comprehensive overall study that said, "This is best compared to that," we sort of didn't get into that type of plan until late in the seventies, '78 or thereabouts.^{156/} Mickey Albert, Dick Bodman and so forth came into the company. But it was just natural I think from the international system to think

^{155/} delete: I don't know looking at the stock today, seems to have affected it adversely. Also, that article just this morning, did you see that?

^{156/} change to: I don't know of any comprehensive study that said this is the best area to get into.

of the possibility of the domestic system.^{157/} It's just different geographical areas -- same large long distances and so forth, so that just seemed a natural follow on to go from international to the domestic to the COMSTAR system.^{158/} Then, of course, ships at sea are kind of a combination of both and still using the same satellite, in fact -- different frequency but same satellite in the sky.^{159/} You just change the terminal a little bit.^{160/} So, it was just seen as the more or less natural outgrowths and then in the mid-seventies -- COMSTAR and MARISAT started around '72, '73 -- mid-seventies we got into, wanted to get more into domestic satellites and we got into with MCI and Lockheed on what later became SBS which

157/ change to: It was a natural progression from an international system to think in terms of a domestic system.

158/ change to: The faculties, expertise, and management were very similar in going from INTELSAT to the domestic and then the maritime satellite systems.

159/ delete: Then, of course, ships at sea are kind of a combination of both and still using the same satellite, in fact, different frequency but same satellite in the sky.

160/ delete: You just change the terminal a little bit.

again, is a sort of domestic satellite system.^{161/} Those things I think were sort of a natural follow-on -- such as aeronautical -- also sort of a natural follow on.^{162/}

Now the thing then with ERT, I guess around '78, '79 Dick Bodman came in the company as Vice President, Finance, he was came out of Dupont, he was very oriented toward planning and that sort of thing.^{163/} I am not sure really what led us to ERT, but the attraction in the ERT was that here was a company an environmental, high-tech business that was already providing network service, but doing it very expensively through landlines and so forth.^{164/} Maybe I am repeating something you already know, but they had systems of putting sensor on a

^{161/} change to: So, those steps were natural outgrowths in the early 1970's. Then in the mid-seventies we got into another domestic satellite system with MCI and Lockheed. That partnership became SBS when IBM and later Aetna bought out MCI and Lockheed.

^{162/} change to: The next phase in COMSAT's development involved a number of acquisitions.

^{163/} change to: In 1978, Dick Bodman came into the company as Vice President Finance. He came from Dupont and was very oriented toward long range planning.

^{164/} change to: I am not sure really what led us to ERT initially, but it seemed to be a good fit. It was a growing high-tech environmental business that was already providing network service but doing it very expensively through telephone land lines.

smoke stack and having a recorder or something in a little van at the bottom and then a landline back to Cambridge and they would take readings every hour on various phenomena at the top of that smoke stack and then together with weather forecasters they had back in Cambridge, they could usually predict what how weather conditions were going to change and they would tell the power company, "Well, you'd better switch to number two coal or you are going exceeding the environmental limits," and so forth.^{165/} We had been working with the NOAA not NOAH, the Geological Survey, I guess, we had put a couple of small stations out on rivers and were sensing the raise and fall of rivers and speed of flow and so forth, and transmitting via satellite -- just as a demonstration -- back to Reston. So we were, in fact, I think some of our people ran across ERT in this connection.^{166/} They were one of the largest at the

^{165/} change to: They had a number of networks in operation involving a sensor placed on an electric company's power plant smoke stack. These were connected through landlines back to Cambridge. With hourly readings on various conditions at the top of each smoke stack, combined with ERT's weather forecasts for each area, ERT could tell the power company what to do in order to keep their smoke emissions within environmental limits.

^{166/} change to: COMSAT had been working with the Geological Survey in placing a few experimental unattended small stations along rivers. Using measurement devices to
(Continued on page 65)

time in the environmental field and just seemed like a natural thing to do to try to take environmental capabilities and go into small terminals at remote locations, unattended, to bring back all sorts of data -- radiation, noise, meteorological information or hydrological information and so forth. I think it was really our belief that we could combine a satellite network with that end-service because it appeared to us that always through the years has been appealing that we provide the service rather than just the pipe.^{167/} When you provide the pipes that's fine, but money is in providing the service to the people. This seemed to be an opportunity to get into that and expand the unattended network; which really never has gone very

(Continued from page 64)

- ^{166/} measure water level and rate of flow, those data were transmitted by satellite to a central location which could then predict flood stages, etc.
- ^{167/} change to: ERT was one of the largest firms at the time in the environmental field, and it seemed like good business to combine environmental capabilities with small unattended terminals at remote locations to bring back all sorts of data. There were possibilities in remote measurement of radiation, noise, weather, water, earthquakes, and so forth. With ERT we could provide a complete service rather than just the facility, or pipe. Providing the pipe was profitable, but the real money lies in providing the service. The concept has never really worked out very well. One reason may have been the decreased governmental emphasis on environmental matters.

well, I am not sure why, but it just hasn't materialized. Well, one thing I think it's very difficult to build very low cost and very reliable antenna that you can put out there somewhere where it was [inaudible]^{168/}

TMS: What about a group like AMPLICA, is that along the same lines?

CR: Well, not quite the same. We had a study done around '77 or '78 by Harbridge House in Boston to see whether or see how we could expand the use of our technical capabilities. We all this tremendous lab and so forth and technical staff and how could we maximize the use of it.^{169/} We were obviously, we were interested in, is there anything in the area of manufacturing that we could do and I don't know whether that

^{168/} delete: When you provide the pipes it was fine, but money is in providing the service do the people. This seemed to be an opportunity to get into that and expand the unattended network. Which really never has gone very well, I am not sure why, but it just hasn't materialized. Well, one thing I think it's very difficult to build very low cost and very reliable antenna that you can put out there somewhere where it was [inaudible]

^{169/} change to: COMSAT had built a unique technical staff and a laboratory that had been highly successful in building and operating satellite systems. The question now was how could we maximize the use of it.

study is around but as I recall of this it came pretty strongly on the idea that were a service company, we could provide systems integration so forth.^{170/} But, manufacturing except in very specialized equipment where we had proprietary patents or something was a very tough business to get into.^{171/} But, after that we, of course, we had always been trying to through our technical consultanting services provide systems type service to people, but we set up a small group to make something that we felt we had a unique position in -- echo cancellers..^{172/} That's what's known as "Micro..... what's the name of that thing over there in Alexandria, it was under

^{170/} change to: Obviously, the interest was whether there was a niche in manufacturing for COMSAT. As I recall their report, it came out pretty strongly on the idea that COMSAT's expertise was primarily in integration and systems.

^{171/} change to: It recommended manufacturing or specialized equipment and devices for which we had proprietary patents.

^{172/} change to: Of course, we had done considerable technical consulting through the years, but we set up a new small group to develop and fabricate equipments that were coming out of our laboratories. That groups is now located across the river in Virginia, and is called Telesystems. They started by manufacturing echo suppressors.

COMSAT GENERAL initially, I can't think of the name of it.^{173/}
Perigard's outfit.^{174/} But Perigard now heads up AMPLICA
over thereTelesystems. ^{175/} So, we started
manufacturing an echo canceller and I think the people who were
there saw opportunities for other things they wanted to do and
they built it up somewhat, sort of before we knew it we were
not trying to get a broad spectrum.^{176/} Another thing that I
recall from the TELESYSTEMS study from the Harbridge House
study was they said, "If you are going to manufacture your own
stuff to have a complete of array of everything," I mean
that's, you know, you have to maximize your sales force and so

173/ delete: That's what's known as micro what's the name of
that, over here in Alexandria, it was under COMSAT
GENERAL initially.

TMS: I can't think of the name of it.

CR: I can't think of the name of it.

174/ delete: Perigard's outfit.

175/ delete: But Perigard now heads up AMPLICA
Telesystems.

176/ delete: So, we started manufacturing an echo canceller
and I think the people were opportunities for other
things they wanted to do and they built it up somewhat
sort of before we knew it we were not trying to get a
broad spectrum.

forth you have to have a broad array.^{177/} Here we are taking special niche in manufacturing here where we have a unique capability and then of course from echo cancellers they went into the MARITIME; they worked on and developed a lower cost MARITIME terminal than we were able to get from Scientific Atlanta. So these things look good and they kept going. It's become a profitable business, but I think it's a very specialized business.^{178/} With that then I think that peaked our interest in manufacturing and AMPLICA really had attraction, a very good reputation, particularly for military products and amplifiers. We were looking I think at the time -- I wasn't in the planning part of the company and they did more of this directly -- but I think they were looking for something that would fit in with the satellite television which we had started on. We said, "Okay we don't just provide the

^{177/} delete: It's another thing that I recall from the TELESYSTEMS study from the Harbridge House study was they said if you are going to manufacture your own stuff to have a complete array of everything I mean that's you know you have to maximize your sales force and so forth you have to have a broad array.

^{178/} change to: Later, they worked on and developed a lower cost MARITIME terminal than we were able to get from Scientific Atlanta. Telesystems kept going and it has become a profitable business, but it is a very specialized manufacturing business.

another service, but we want to build some of the build some of the equipment so forth." So we buy a growing company, AMPLICA was a growing company, we looked at several: California Microwave, there were other companies we looked at the time and we bought it, I think one because manufacturing seemed to be moving ahead pretty well with Telesystems and secondly, I think we wanted to fit it in with our strategy on direct broadcast satellites -- to do the manufacturing part, not of everything, because there wasn't big enough to manufacture everything particularly for the size system that we had envisioned.^{179/} But to sort of have an alternative, and a base testing point for competitors and so forth to handle, so we bought

^{179/} change to: AMPLICA is, of course, a much broader manufacturing firm. It has a very good reputation particularly for military products and amplifiers. In addition, its capabilities provided a good basis for manufacture of the home antennae needed for STC, the domestic satellite television system. AMPLICA was a growing company, and we bought it I think one because manufacturing seemed to be moving ahead pretty well in TELESYSTEMS and secondly, I think we wanted to fit it in with our strategy on domestic satellite television to do some of the manufacturing. AMPLICA could not do all the fabrication, particularly for the size system that we envisioned, but having some manufacturing capability provided a test base for comparison with suppliers.

AMPLICA.^{180/} Well I say we did, COMSAT GENERAL did. We had to do all these things through COMSAT GENERAL because of FCC keeping World Systems was formed about that time.^{181/}

TMS: Keeping the two separate?

CR: Yes, keeping the two separate.

TMS: Let's shift gears again, talk not so much about competition and market stature as about your vision of COMSAT over the past -- the time that you've been associated with it. What would you say are COMSAT's major achievements have been, a couple that really stand out in your mind as important and to what factors would you attribute the success of COMSAT in these endeavors? Kind of connecting two questions here.

CR: Well, I think without, in my mind, without question the

^{180/} delete: To sort of have an alternative, and a base testing point for competitors and so forth to handle, so we bought AMPLICA.

^{181/} change to: We had to do all these things through COMSAT GENERAL because of FCC insistence that we keep our regulated international system separate. That is, of course, now called World Systems.

primary accomplishment has been building up a worldwide network -- just establish communication from the smallest country^{182/} to the largest countries and to do it on an economical basis. Let's say an African country, let's say Nigeria for example, had communications but they had a few landlines that had to go through Europe to get to the United States to go through cable -- they had all sorts of costs and agreements and so forth.^{183/} Now for, you know, a modest amount -- it's large for them to pay a couple of million dollars -- but for a fairly modest amount they can establish their stations and immediately have contact with just virtually every country; if you can't do it directly you can do a double hop and so forth. It's not only a voice communication but television and so forth and I think it undoubtedly has done this much faster than it would have been done or possibly couldn't have been done any other

^{182/} change to: Well, I think the primary accomplishment has been to set up a worldwide satellite communications network that brings even small countries into the system at a modest cost.

^{183/} change to: A small country, say Nigeria for example, had some means of communication by transiting through many other countries to get to a final destination such as the United States.

way.184/

TMS: How do you explain this kind of success?

CR: Well, I think it's first of all, you have to acknowledge that the basic work on communication satellites was really done by the U.S. Government so that we benefitted, certainly greatly by getting that knowledge. You know the government didn't pass us books with all this in it, but they had in Hughes Aircraft and other manufactures, Lockheed and TRW, had paid for building satellites and a lot of the background resided in the manufacturers. But I think it's a just a technical and operational accomplishment by COMSAT, I don't think that any particular finance aspect to it except to the extent that I think it was all done fairly economically and these countries, as I say, can come into the system, a well established, wide system, and even if they don't want permanent circuits they can get through Spade get a few minutes of time to a country --

184/ change to: Aside from delays and quality of service, it was costly. Now, for several million dollars, a country can establish its own earth station and immediately be in contact with virtually every country. If they can't go directly to the other side of the globe on one satellite, they can double hop. And its not only voice communication but television and all types of data.

it's a very flexible and useful system.^{185/} I think that's the main accomplishment. Now, I don't want to imply either that COMSAT did this all by themselves, INTELSAT had a lot to do with it.^{186/} But, I don't think anyone would deny that it was the leadership of the U.S. and indeed even in INTELSAT staff today, a lot of the people are former COMSAT employees who have moved over there and become INTELSAT employees and so there's a large measure of the credit, I think does go to COMSAT not forgetting, of course, the international people that also played a significant part.^{187/}

TMS: You mentioned leadership at COMSAT. How would you

^{185/} change to: Well, the initial impetus was the work on communication satellites done by the U.S. government. This expertise resided in NASA and in various manufacturers, such as Hughes Aircraft. Beyond that start, there was the dedication and expertise of the COMSAT technical and operational staff. I don't think there was any particular finance contribution other than that we developed an effective system to finance the entire operation.

^{186/} change to: I don't want to imply that COMSAT did these things all by itself; the other signatories in INTELSAT had a lot to do with it.

^{187/} change to: But, I don't think anyone would deny that it was the leadership of COMSAT and the U.S.; indeed the INTELSAT staff even today has many former COMSAT employees.

characterize this leadership? What is it about the managers and the leaders at COMSAT that allowed them -- it's kind of a nebulous question, I realize -- but what allowed them to do this? It's quite a remarkable achievement.

CR: Well, I think one, Dr. Charyk, of course, has an excellent technical background and I think he is recognized from the very beginning by everyone as a very sound technical man and I don't know what particular quality it is about him, but I think it's he and the people that were with him in the beginning technical, the first technical Vice President was Sig Rieger who died unfortunately but he came from Rand where he had studied communication satellites he had been a paper clip scientist from Germany, you are familiar with that project?^{188/}

TMS: Uh huh

CR: He came over on that from Penemunde and he was at

^{188/} change to: Well, I think first of Dr. Charyk. He was recognized from the beginning as a very sound technical manager. He was able to attract other expert technical and operational people. One of the early ones was our first technical Vice President, Sieg Rieger, who unfortunately died. He came from Rand where he had worked on communication satellite studies.

Cambridge Research Center in the Air Force and then he went to RAND, but he was certainly well recognized. He was Chairman of the Technical Subcommittee for the first few years.^{189/} General Sampson, who came from the Army from the Defense Communications and he headed up the operations side.^{190/} I think just people of stature that the others had confidence in. I reflected on this too with Reg Westlake, when I think back the first Interim Committee meeting in 1965, here were the heads -- was not the International Vice President or some other -- these are the heads of the PTT's around the world and they came to the meetings.^{191/} Now, and I am not being critical, after the first few years they started to have designated people that were INTELSAT representatives, but in those days it was so important that the actual head of the PTT came -- and the Canadians, Doug Bowie and the Australian Housley and Jimmy

^{189/} change to: He was Chairman of the INTELSAT Technical Sub-Committee for the first few years.

^{190/} change to: General Sampson, who came from the Defense Communications Agency headed up operations as Vice President.

^{191/} change to: These were recognized experts that inspired confidence and attracted other good people. Then, I think back to the first Interim Committee meeting in 1965. Its members were the heads of the PTTs around the world.

Gill from UK and these people were very prominent -- the heads of their organization. They put a lot into this.^{192/} They got to know very quickly Charyk, and Rieger, and Sampson and so forth and had confidence in what they were doing.^{193/} They all just said, "We are going to make this work," and it worked. You know, the meetings were long and sometimes strained, but they tried not to vote, if they could avoid it, but there have been times when they've actually had to vote on things usually the US prevails because it has such a big percentage.^{194/}

TMS: [Turns tape over] Okay. You were saying about the stature of the men involved?

CR: I think that and the fact that the US clearly had done, you know, the early work in this and while they were each

^{192/} change to: There were so many policy decisions to be made that they did not send alternates. These were key telecommunicators from around the world who met frequently here in Washington.

^{193/} delete: They got to know very quickly Charyk, Rieger, and Samson and so forth and had confidence in what they were doing.

^{194/} change to: Their meetings were long and sometimes strained, but they always tried to reach unanimous decisions. There were a few times when they had to vote but these were rare exceptions.

interested in, perhaps more from the transmission than the earth station side, no other country certainly had the capability of satellite-wise in those days, and launch-wise to handle it.^{195/} So, they, you know, put their faith in these people and it was merited.^{196/}

TMS: We have talked about the great strength of COMSAT and COMSAT's accomplishments. If you had to put your finger on one weakness in your mind, a problem that COMSAT has had along the way structural or internal, that has kept it from realizing, let's call it its full potential, what would you say that was? Not assuming that there must be such a thing, but if there is, what would you say that it was?

CR: Well, I wouldn't know what to say about the early years. I can't really think of a weakness, but I think as COMSAT has gotten into the acquisition area. I think just haven't been as

^{195/} change to: I think that, and the fact that the U.S. had done the early development work. Other countries had done work on the transmission and earth stations, but no other country had the satellite and launch capability.

^{196/} delete: So, they, you know put their faith in these people and it was merited.

sensitive to the market as it should be.^{197/} I think many times -- and this great hindsight because I was part of the staff and --

TMS: Hindsight is a good thing to have.

CR: But, like most scientific people that I've been associated with through the years, if something can be done they want to do it.^{198/} But I think particularly as we, for example SBS and certainly you know it can be done if you build a system and so forth, but there is the other side of it and to be a true competitive organization -- I am not talking about the international side -- you really have to be very very sensitised to the market sense of cost and what really they are looking for, and are they willing to pay for it, and so forth.

^{197/} change to: I can't really think of a weakness, but as COMSAT has gotten into acquisitions, I don't think we were as sensitive to the market demand as we might have been.

^{198/} change to: This is great hindsight because I was part of the staff, but if something could be done, we possibly put too much reliance on expectations that a market would develop.

And, I don't know that we have really done enough on that.^{199/}

TMS: Can you give specific instance where you think that might have been the case? Again, it is using hindsight to an extent.

CR: Well, I think it is using hindsight, but looking at ERT, at least, it was my belief that the reason we bought ERT was to go into these low-cost remote unattended earth stations and set up networks that would use satellites to bring data of all sorts to central points and clearly it can be done and but the question is, you know, "Is there anybody willing to pay for it?"^{200/} And how cheaply can it be done?^{201/} It seems to

^{199/} delete: But I think particularly as we, for example SBS and certainly you know it can be done if you build a system and so forth, but there is the other side of it and to be a true competitive organization, I am not talking about the international side, you really have to be really really sensitive to the market sense of cost and what really they are looking for, are they willing to pay for it, and so forth. And, I don't know that we have really done enough on that.

^{200/} change to: Well, ERT may have been such a case in hindsight. It was my belief that the reason we bought ERT was to go into these low cost remote unattended earth stations and set up networks that would use satellites to bring all sorts of data to central points. Clearly it could be done, but the ultimate question is how much will it cost and is there anybody willing to pay for it.

^{201/} delete: How cheaply can it be done?

me now in retrospect, we just did not have a good enough feel for the market in that situation.

Now, I know satellite television has been doing an awful lot of market studies and I'm not sure this criticism really applies to them, because I don't know how much they really know about that market. They've had Arthur [D. Little] consulting firm up in Boston.^{202/} They had a lot of market studies done, I think they feel they have a good feel for the market.^{203/} Gee, other people did too and look here is Western Union and CBS and so forth that are backing away from it.^{204/}

TMS: Well, you think then, if this has been a problem in your experience for COMSAT, this sensitivity to the market and finding out if a market is really available for a particular service, do you think that there is evidence that COMSAT has

^{202/} change to: Now, I know the Satellite Television Corporation has been doing a lot of market studies. They seem to have a good feel for the market, but that remains to be seen.

^{203/} delete: They had a lot of market studies done. I think they feel they have a good feel for the market.

^{204/} change to: Other companies, such as GTE, Western Union, and CBS were interested in this market, and now there are reports that they are backing away from it.

learned a lesson and is paying much more attention to marketing
-- putting a lot more stress on that?

CR: Well, they seemed to be in satellite television.^{205/}
Arthur D. Little was who I was trying to think of. They did
some of the early studies for us on what kind of penetration
could be expected and so forth.^{206/}

TMS: For STC, that is?

CR: Yes. But, I don't think that it was anything done, for
example, in ERT situation.^{207/}

TMS: What about AMPLICA? Was that done a little more
attention to the ?

CR: Well, that was sort of a tie in with the direct broadcast

^{205/} change to: Well, they seemed to be in direct satellite
to home television.

^{206/} change to: They did some studies on number of
households, what kind of penetration could be expected,
completion, and so forth.

^{207/} change to: But, I don't think we went into that detailed
a study, for example, in the ERT situation.

satellite and the idea was that it would be to do some of the manufacturing.^{208/} Besides, I think we had gotten -- what's the term? -- I think it was a new type of chip or new technology that I think in some particular applications is going to surpass the microchip and the Labs have done some work on that. They had done some experimental work and felt that some so good possibility and Amplica had also done some and the thought was perhaps they could do some of the manufacturing.

TMS: So there may be some new proprietary technology coming out of this as well for the future..^{209/}

Well, we have covered just about everything that I had hoped to cover at this point. Do you have anything you want to clarify or add for the record at this point? Anything that you

208/ change to: Well, that was sort of a tie in the direct broadcast satellite, and the idea was that it would be an in house capability to do some of the equipment manufacturing.

209/ delete: Besides, I think that we had gotten, what's the term? I think it was a new type of ship or new technology that I think in some particular application is going to surpass microship and labs have done work on that and we found that they had done some experimental work and felt that some so good possibility and Amplica had also done some and thought was perhaps they could do some of the manufacturing. So there may be some new proprietary technology coming out of this as well.

prepared to say that I glossed over or slid past?

CR: No, I can't think of anything.

TMS: In that case, I thank you very much.