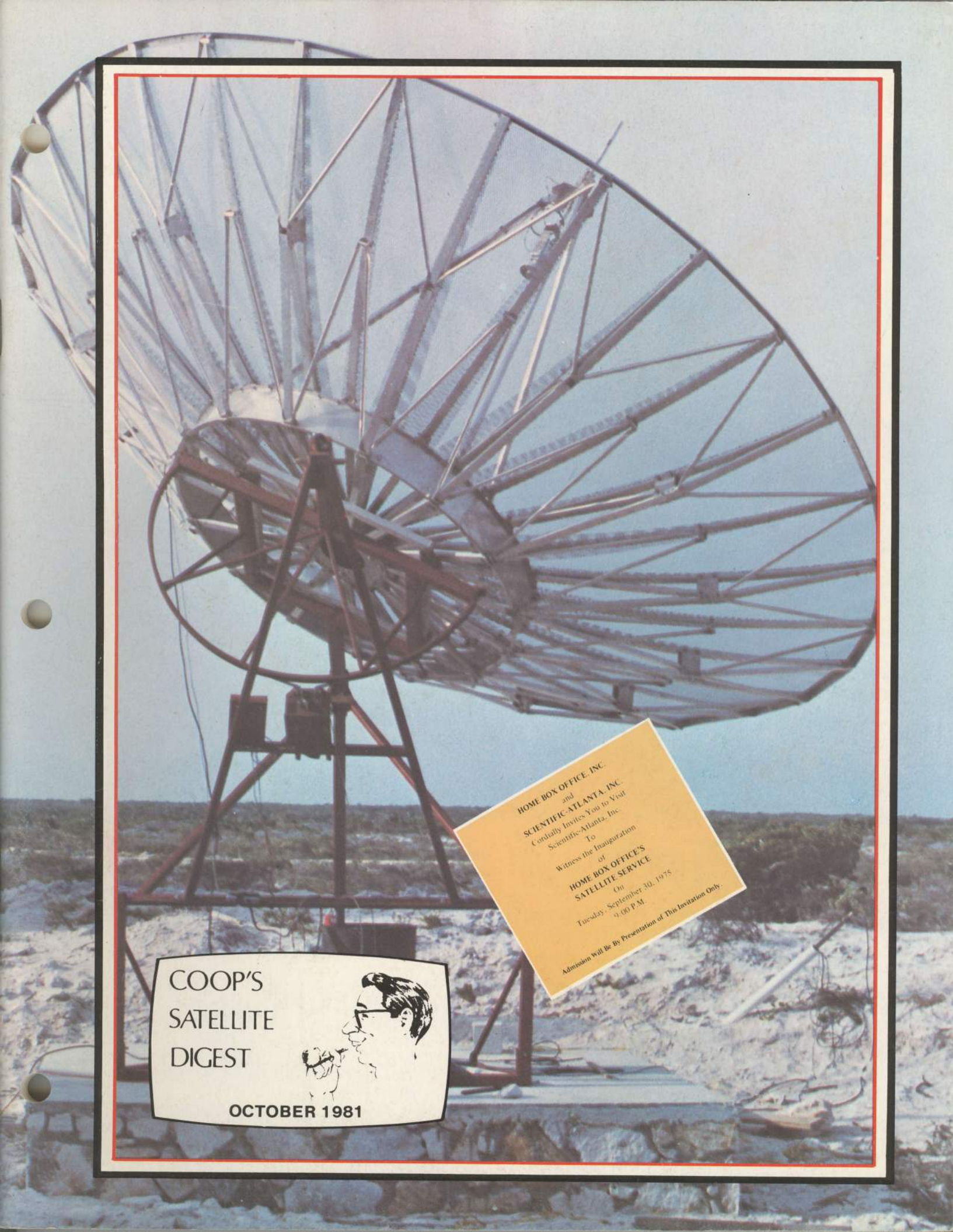


COOP'S SATELLITE DIGEST

OCTOBER 1981

Birth of a legend

National Microtech, Inc. introduces Apollo T.M. X9 Satellite Antenna.

National Microtech, Inc. continues to sell more home satellite antenna systems than anyone in the world. Microtech's new Apollo™ is so far advanced over our competition-in features, performance, and cost- that we feel Apollo™ is destined to become a legend in the satellite industry. If you are interested in buying or selling Apollo™ systems, give us a call today. Remember, no one sells the Apollo™ but Microtech dealers and distributors. See the legend today.

DEALER PRICES

3 Units	$1395
10 Units	$1195
100 Units	$1095

Optional remote satellite finder $495 wholesale dealer price.

National Microtech, Inc.

1-800-647-6144

In Mississippi 601-226-8432

COOP'S SATELLITE DIGEST T1-10/81

COOP'S COMMENT ON TECHNOLOGY

WHAT IS A FAIR RATE?

A recent communication from SPACE alerts the membership that CNN (Cable News Network) has reappraised its "rate structure" and determined that there shall be a minimum annual charge of $75 for CNN service. SPACE makes the point that CNN charges individual cable connected homes either 20 cents or 25 cents per month; the difference being that the lower rate applies when the cable system also takes WTBS fulltime. SPACE feels the $75 per year for a single home is discriminatory. They term the fee "...on the outrageous side... some thirty times the rate for a cable subscriber...".

I am not so sure I agree with SPACE on this one. Certainly $75 a year for a single home is high, even for CNN's 24 hour per day coverage. Asking an "outrageous" fee is a good way to put people into the delicate position of having to evaluate the value they receive for their expenditure. Many people, faced with paying $75 a year for CNN, or simply not paying and watching anyhow, are going to opt for the latter.

High single family rates are not new to our industry. Originally WTBS was available (for a brief period of time) at an annual single family rate of $60. WGN followed suit. But too often the woudl be subscriber failed to read and digest the balance of the fine print in the "offering". This may be the case with SPACE's assessment of the CNN $75 per year fee.

What CNN is saying is that their **minimum fee per year** is $75. What WTBS originally said, what WGN says, is that their **minimum fee** is $60 per year. Down in the fine print all of these people also note that the same minimum fee applies to more than a single connected home. In the case of WTBS and WGN, they were telling us that $60 a year or $5 a month (but paid annually) would pay for 1 home, **or 50 homes**. And any number in between. CNN is telling us the same thing; except the number is 30 homes, or any number between 1 and 30.

The problem here is largely semantics. I do not expect to walk into the Miami wholesale produce area and buy a **single apple** at the divided-by pricing that **50 bushels** would sell for.

The simple fact is that all satellite services "sold" are sold at wholesale rates. In bulk. Or they are given away, without charge. I can understand the argument that if you provide your own terminal, you (like the cable operator) should be able to buy at the wholesale rate. I can also understand the position of the seller who does not want 1,300 bulk buyers and 13,000 single unit buyers on his books. I am enough of a businessman to know that the office staff would have to increase dramatically just to keep tabs on the low-rate single unit buyers.

I certainly don't expect CNN (or anyone else) to establish me as a separate ledger line entry, keep track of my payment record, send me promotional literature and treat me like a "bulk" or "wholesale" buyer of hundreds or thousands of units of their service, when I am only paying for a **single unit**.

I see two possible solutions to this impass. SPACE should pursue both and see which one works. First, I encourage SPACE to negotiate with CNN (and others) so that the minimum fee (whatever it is) is not for "**up to 30** subscriber units **for a year**", but rather, it is for "**a single** subscriber unit **for 30 years**". CNN doesn't want your ledger card popping up every month or year; fine, let them establish a simple "re-bill in 30 year" file. Neither you nor Ted Turner are likely to be still alive in 30 years, so who really cares. And, CNN will be a small line in a history book, if that. That lets them forget about you and by forgetting you (once having paid) you are no longer an entry line that requires regular office personnel time, or filing space. My alternate plan would be for **SPACE** to handle the subscriber files. **They send** CNN $75 for a year and they then in turn sign up 30 private terminal operators who pay SPACE. Since SPACE is hurting for money, let them charge not 75 divided by 30, or $2.50 per member per year, but rather $5 per year for CNN. None of us would object to paying that fee for CNN, and in the process providing SPACE with much needed funding. If I were doing it, I'd arrange to pay CNN $75 for "30 subscriber untis". Then I'd turn around and "sell" the same 30 subscriber units to a SPACE **dealer**. He would pay SPACE $150 for the same 30 units, and he would either "gift" the subscriber with the CNN first year subscription, or he'd simply collect it (and other applicable fees) from the subscriber. I'd also **insist** that each such private terminal owner become a SPACE member, and I'd build into the low-end private terminal owner/operator membership category some amount of money to cover automatic viewing rights to a real package of "SPACE negotiated Viewing Services". If you packaged CNN, WGN, Nickelodeon, and WOR at $5 each ($20 total) with PTL, CBN, The Music Channel, and C-SPAN (all no charge) as a "SPACE Viewing Package", and offered these **with** a one year membership in SPACE for say $50 a year, then the SPACE dealer would really have a nice package to sell and to help take the cloud off of "legal viewing". Best of all, SPACE would make money and gain instant stature with the programming crowd by becoming the focal point here.

So is $75 a fair rate for CNN? Probably not. But kicking and screaming and yelling about discrimination is not the answer either. It's time to turn the lemon into lemon-aide.

CSD TECHNOLOGY

COOP'S SATELLITE DIGEST (Technical Section) is published monthly by West Indies Video, Ltd. a Turks & Caicos Corporation with business offices located at Grace Bay, Providenciales, Turks & Caicos, BWI. Mail to CSD, advertising inquiries and subscriptions should be addressed to CSD, P. O. Box G, Arcadia, OK 73007; a mail forwarding point. CSD maintains no office in the United States of America although assistance relative to CSD advertising and subscriptions is available through the offices of Satellite Television Technology at (405)396-2574. STT has no legal affiliation with West Indies Video, Ltd. Subscription rates to CSD are $50 per year in the US, Canada and Mexico; $75 elsewhere. Entire contents Copyright 1981 by West Indies Video, Ltd.; Robert B., Susan T., Kevin P., and Tasha A. Cooper.

BEING PREPARED FOR LAUNCH OF F3R

A SECOND TRY

In December of 1979 RCA launched via NASA SATCOM F3. This bird was to be devoted exclusively to cable television programming and was (at the time) to rest in Clarke orbit at 132 degrees west. The launch into low orbit went off with no major hitches. However, once the low orbit trajectory was established the bird still had to be "hurled" out of low orbit into its Clarke/geo-stationary orbit. This is a little bit like twirling a rock about your head in a sling, as the Bible tells us David did to fell Goliath. At precisely the proper point in time and space the on board rockets are fired to "kick" the satellite out of low orbit and into an orbit that is higher and more nearly circular. David's rock was dead on target; RCA's was not. RCA F3 literally disappeared into space. And with it went all concrete evidence of what mal-function had occurred. Scientists and technicians, working with the recorded flight data up to the point of disappearance, were able to create several possible scenarios which individually would explain the lost satellite. Nearly two years have been spent, in the interim, building a new (replacement) satellite, and, second-guessing the failure with backup safety measures should it try to repeat again.

The loss of F3 will, in historical perspective, prove to be a turning point in US domestic satellite communications. Had F3 flown, on schedule, to target, the explosive growth and uncertainty which we now see with forthcoming Hughes, Southern Pacific, Westar (et al) birds would have taken a decidedly different turn. By losing F3, when they did, RCA provided a large hole in the sky which would be competition has scrambled to fill in. With F3, RCA had a "lock" on the cable industry business. Between F3 and F1, RCA was in a position to tie up most of the would be cable programmers. Without F3, on time, a gap has developed which now appears to guarantee us a much wider choice of satellite transponders in the mid '80s. As long as RCA dominated the cable and occasional video fields, in the sky, others (Hughes et al) were reluctant to enter the field. With RCA's loss of F3, a "timely opportunity" developed and with the onrush of new entrants into the field came encouragement for yet more would be programmers to have a go at national satellite networking.

There is that chance, of course, **that F3R will also not fly.** If that proves to be true, RCA is prepared with the launch of F4, approximately 60 days later, to back up F3R. When the original F3 flew, RCA had no on-ground spare (F3 was in fact originally intended to be a "spare" for F1 and F2). There is a considerable amount of nervousness in the satellite industry these days over the launch of F3R and others that will quickly follow through 1982; the satellite insurance industry coughed up more than $70,000,000 to RCA after the loss of F3 and that loss promptly caused insurance rates to soar. The insurance people had been asking premiums equal to roughly ten percent of the insured loss value; or $7,000,000 in the case of F3. They, in effect, "expected" to see every ninth bird launched, lost. F3 was the 9th US domestic satellite to go up. If the insurance folks are correct in their assumption that one-in-every-9 will fail, during launch, everyone hopes that the one to be lost in the "next group of 9" doesn't happen until well into the second set. If any of the next few to be launched (F3R, F4, W4, W5, in that sequence, over the next 12 months) **are** lost, insurance premiums may well soar to the 25% (of insured value) region; putting a severe damper on the "economies" of space relay.

RCA then has a great deal riding on the successful launch of F3R. It not only needs F3 operating, to retrieve its slipping position with the cable TV industry; it also needs the prestige of a successful launch (of F3R and F4 right behind it) to maintain a viable position in the worldwide satellite market. RCA birds, designed and built by RCA aerospace, are trying very hard to compete with larger bird suppliers such as Hughes and Ford.

The cable industry has as much or more riding on the success of F3R. Since the loss of F3, programming has been split over three or four birds. This has "fractionalized" the audience for many of the newer services, limiting their cable distribution to those systems with two or more dishes. RCA attempted to hold the cable crew together by working out a sub-leasing arrangement with AT&T for use of COMSTAR D2, after the failure of F3. A handful of services took the D2 interim arrangements; many more decided to "wait" or go elsewhere. Cable programming is also found on W1 and W3 these days.

Not The First Time

When F3R is launched, on station at **131** degrees west, and checked out to the satisfaction of RCA, a date will **then** be announced; a date on which all existing services on F1 will "pick up and move" from F1 to F3R. This is, as you might suspect, not an easy act to pull off.

Back on June 1 of 1978 a similar event occurred. The cable television industry had, from the start of the first HBO service in the fall of 1976, been using RCA's F2 bird at 119 degrees west. RCA first loaded up the available horizontal transponders on F2, and then it began loading of vertical transponders. F2 was (and is) however largely devoted to Alaskan traffic and it does in fact have a special boresight beam for six of the transponders which favors Alaska, to the exclusion of service in the "lower 48". When the cable programming "load" exceeded the supply of transponders on F2, RCA notified everyone that they would have to move the services to F1.

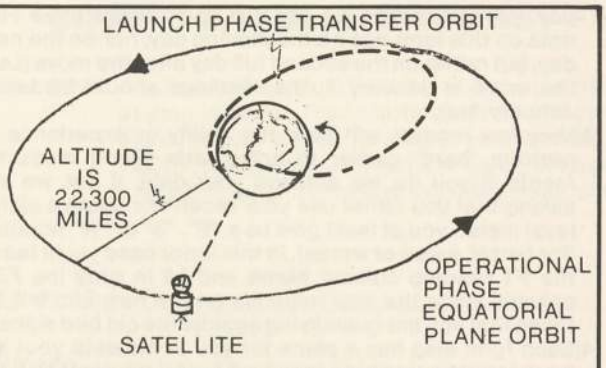
In those days there are were fewer than 500 CATV terminals using F2, and, most of the uplinks were owned or controlled by RCA. As you can reason, not only must the receiving terminal antennas be re-directed to the new bird but the uplink terminals as well must be re-directed. The 1978 move from 119 west to 135 west was across a considerably larger chunk of sky than the forthcoming move. A number of the "early" CATV polar mounted antennas found much to the surprise of their owners that they did not "track" properly over the 119 to 135 span, and this left some CATV systems without service for a few days while they were cutting and welding on antenna support members.

Formal announcement of how each of the uplinked services will handle their part of the "move" will not be coming for many months yet. Still, the sequence followed during the June 1978 move, from F2 to F1, can give us some advance clue of what to expect, from whom, when.

All of which says that uncertainty is the one continuing thread that runs through all that has happened, and is likely to continue to happen, for the next year or more. Each action provokes reactions and new programmer scenarios are crea-

---

F3R UPDATE - The launch of F3R and F4 have been set back four to six weeks respectively due to problems with Delta launch vehicle. This would place F3R operational date around mid to late January; F4 to early March.



IN GEO-STATIONARY ORBIT AROUND EARTH, IT IS ALWAYS ABOVE THE SAME POINT ON THE EARTH'S EQUATOR, THUS IT APPEARS TO BE STATIONARY IN THE SKY. SATELLITE IS TYPICALLY MAINTAINED AT ITS ORBITAL POSITION TO AN ACCURACY OF +/- 0.1 DEGREES OR LESS AS SEEN FROM THE EARTH.

ted weekly which further complicate the maturing of the service.

1)Shortly after RCA has F3R spotted at 131 west, they will begin the systematic checkout of each transponder. Remember that the bird is "flown" with telemetered data sent to the bird, and received from the bird just above 3700 and just below 4200 (MHz). This telemetered data is perceptible with a spectrum analyzer attached to a relatively large dish (16 foot up) but you cannot expect to see much from it with smaller antenna equipment. Telemetered data will be exchanged with the bird on a constant basis, even as it is being "flown" into position at 131 west.

2)Once "on station", F3R will be fed video signals from Vernon Valley (N.J.) and South Mountain (California). Each transponder will be checked for its full range of operational characteristics, to see if each survived "the flight" intact. While these checks are being run, a separate set of checks are run on the powering system (to insure the solar panels deployed properly and that the tracking mechanism is functional), control system and standby systems.

RCA suggests that a full flight "check-out" may require two months time. Towards the **end** of the check-out period, you may begin to see **some** of the CATV programming services pop up on their F3R assignments. With the check out complete, and assuming each transponder is found to be operational, a final transponder assignment "table" will **then** be announced and with it will come a target "change over date". That will be the day when those uplinks that do not have "dual bird feed capabilities" must physically move their own uplink antennas to the new F3R bird.

Those services which go to the bird, from an RCA facility (i.e. Showtime, for example through Vernon Valley), will start feeding programming on **both** F1 **and** F3R perhaps two weeks prior to the actual change over date. This is possible because RCA will have a massive uplink antenna fixed on the F3R bird from the very beginning of operations, and the baseband (video and audio) signals present "in facility" to feed such services to a pair of birds at the same time. Other services, such as PTL, will simply not appear on the new bird until they close down service on the old bird and move their uplink antenna.

When Do You Move?

Assuming that you do not have a motor driven antenna

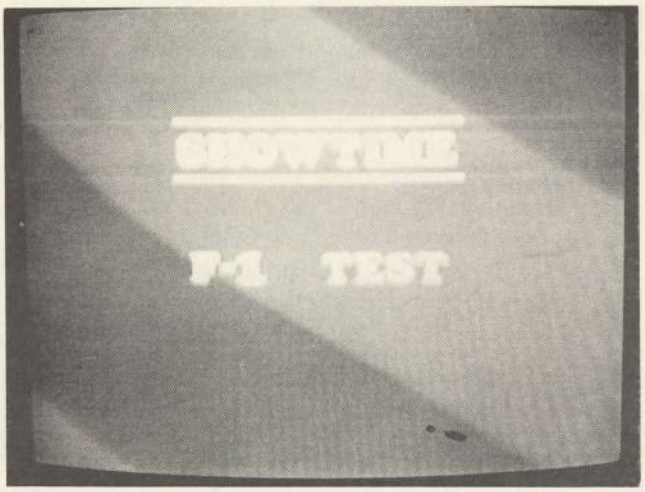
HBO INSTRUCTIONS to all "affiliates" during the F2 to F1 move in 1978.

system so that you can monitor the day-to-day progress on F3R, seemingly the best day to "leave" F1 would be on the formal moving day. If the prior move from F2 to F1 is instructive, there will be plenty of "on screen" instruction, both on the moving day and probably for a week or more of the actual date. There is something to be said for moving your own terminal to the new bird a day **ahead** of "the pack", since watching the new services "pop up" and make their uplink antenna adjustments as they zero-in on the new bird is pretty educational. The system employed is actually pretty straight forward, although some of the uplink terminal operators get nervous and get things out of sequence.

1)**First**, they shut down the uplink transmitter on the old (F1) bird, and

2)**Next**, they swing the antenna (east) towards F3R while watching for signs fo the F3R signals on their 4 GHz feed (i.e. using the dish strictly as a downlink). When the new signal is found, and peaked for maximum level, then...

3)...they fire up the uplink transmitter to re-establish contact with the (new) bird.



SHOWTIME welcomed terminals to F1 with slide announcement to alert their "affiliates" that they had "found the bird".

Measuring The Signal

As an international group of observers/users of the present F1 signals and the new F3R signals, we have a unique ability which even RCA cannot duplicate. And what is that? **As a group**, we can plot within a matter of hours of the change over to F3R just how much better (or worse) the new bird is than the old (F1) bird. The importance of this data cannot be over stated, since it will build a foundation of information for tens of thousands of private and commercial earth terminals to be built in the future.

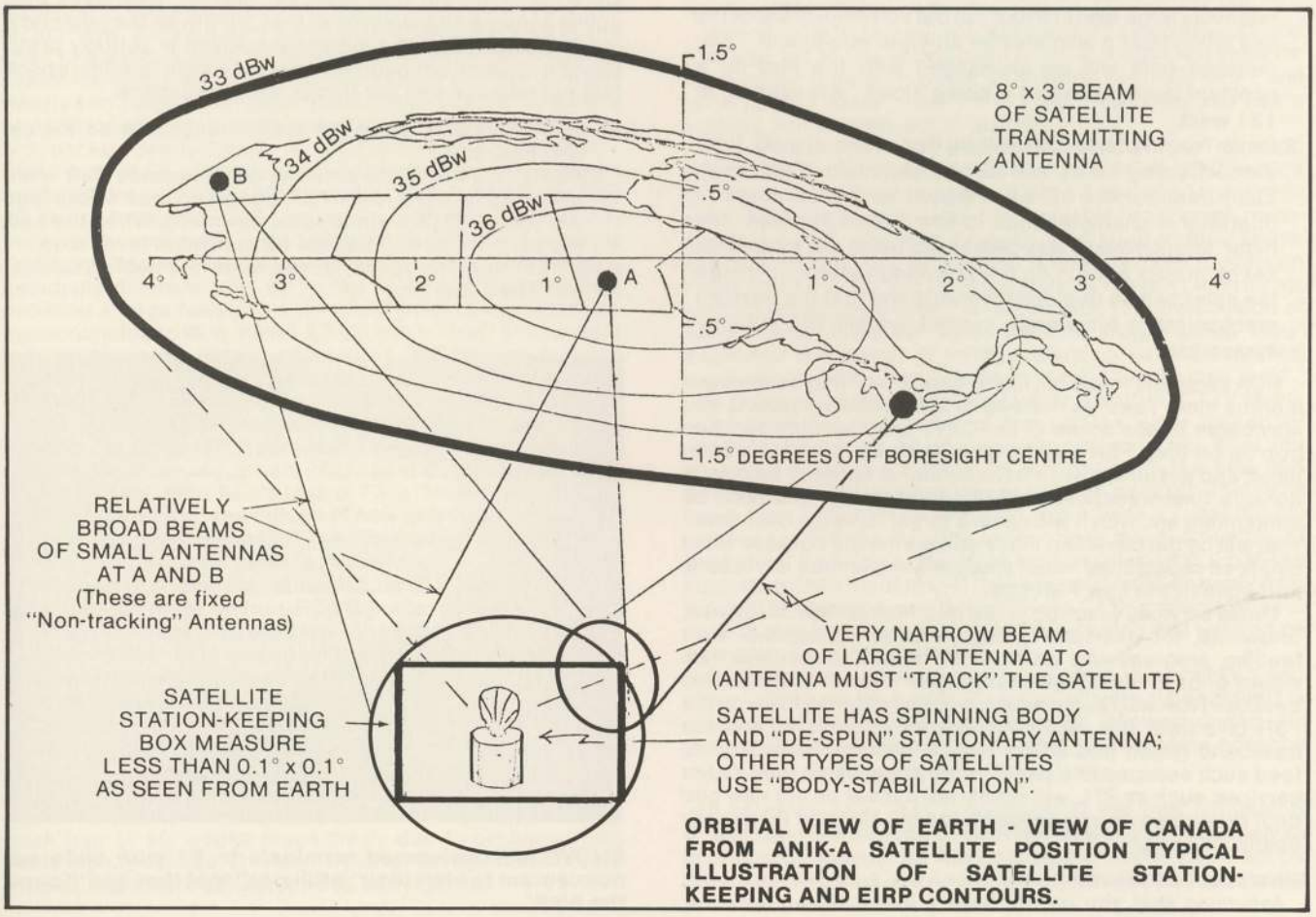
A special logging form appears here in this report. This form is to be used by you in recording the F1 signals just before the official change over day, and then, the F3R signals two days after the change over. Then the form is to be returned to **CSD** promptly so that we can create for publication in the Digest a comprehensive report of just what the changeover from F1 to F3R really meant, all over the North American continent.

The following guidelines are presented for completing the reporting form:

1) We want to record the F1 levels, at each location, while all of the F1 transponders are still active. If the official changeover date is well publicized, via the bird or otherwise, we ask that you make these readings two full days prior to the moving day. If you start to get nervous about them yanking the signals out from under you, jot down the readings on a daily basis on a separate sheet of paper, updating them each day as you go along. In that way you'll have the last set of readings to transfer to the **CSD** reporting form.
2) The day of changeover is likely to be confused; perhaps even chaotic. And the next day is likely to be a "settling in" day. For this reason we ask that you complete the F3R data on this form **not on** the moving day, nor on the next day, but rather on the second full day after the move (i.e. if the move is January 1, the readings should be taken January 3rd).
3) Very few readers will have the ability or experience to perform "hard" carrier to noise ratio (CNR) measurements. If you do, we applaud your data. If not, we are asking that you either use your receiver's relative signal level meter, you at least give us a "B", "S" or "W" notation (for better, same or worse). In this latter case you'll **leave** the **F1** reading column **blank** and fill in **only** the F3R column, since the new readings on the new bird will be those that you are quantifying against the old bird signals.
4) Each form also has a place for you to indicate your **six best looking** transponders on F1, and alternately, F3R. This is purely subjective (i.e. eyeballing it), but it is very important data since it will allow us to analyze the boresight patterns for the F3R bird and to compare that data against the FCC filed boresight data.

What To Expect?

We now have sufficient experience with RCA birds to know that the best thing to "expect" is the unexpected. The F3R bird is very similar to the F1 and 2 birds now operating; according to RCA, the only substantial changes relate to four 8.5 watt transponders (out of 24), a standby 5 watt TWTA amplifier for each six transponder bank, and a ten percent increase in solar powering capability. We have seen nothing that suggests to us that RCA has re-designed their basic transmitting antenna configuration; i.e. the general "pattern" should be quite similar to that we now have with F1/F2.



ORBITAL VIEW OF EARTH - VIEW OF CANADA FROM ANIK-A SATELLITE POSITION TYPICAL ILLUSTRATION OF SATELLITE STATION-KEEPING AND EIRP CONTOURS.

COOP'S SATELLITE DIGEST T5-10/81

COOP'S SATELLITE DIGEST F1 TO F3R COMPARISON ANALYSIS

Instructions: As close to the actual "moving day" as possible, on F1, record your observations of F1 relative signal levels / quality at your location. Then starting with the "moving day" as day one, go forward three days and record the relative signal levels / quality for F3R at your location. Promptly return this form to **CSD**, P. O. Box G, Arcadia, Oklahoma 73007. North American maps showing changes in signal levels and quality will be prepared from data submitted and will appear in the first available issue of **CSD.**

Your Name _____

Address _____

Town/City_____ State_____ Zip_____

Dish Size_____feet; LNA Temperature_____; Receiver Type_____

F1 Observations: Made at _____ ___ST on _____, 198_____.

F3R Observations: Made at _____ ___ST on _____, 1981_____.

F1 Observations	F3R Observations
Trans. 1 - _____	Trans. 1 - _____
Trans. 2 - _____	Trans. 2 - _____
Trans. 3 - _____	Trans. 3 - _____
Trans. 4 - _____	Trans. 4 - _____
Trans. 5 - _____	Trans. 5 - _____
Trans. 6 - _____	Trans. 6 - _____
Trans. 7 - _____	Trans. 7 - _____
Trans. 8 - _____	Trans. 8 - _____
Trans. 9 - _____	Trans. 9 - _____
Trans. 10 - _____	Trans. 10 - _____
Trans. 11 - _____	Trans. 11 - _____
Trans. 12 - _____	Trans. 12 - _____
Trans. 13 - _____	Trans. 13 - _____
Trans. 14 - _____	Trans. 14 - _____
Trans. 15 - _____	Trans. 15 - _____
Trans. 16 - _____	Trans. 16 - _____
Trans. 17 - _____	Trans. 17 - _____
Trans. 18 - _____	Trans. 18 - _____
Trans. 19 - _____	Trans. 19 - _____
Trans. 20 - _____	Trans. 20 - _____
Trans. 21 - _____	Trans. 21 - _____
Trans. 22 - _____	Trans. 22 - _____
Trans. 23 - _____	Trans. 23 - _____
Trans. 24 - _____	Trans. 24 - _____

Best Six Transponders

On F1:

_____, _____, _____, _____, _____, _____,

On F3R:

_____, _____, _____, _____, _____, _____,

Notes:

If you are capable of CNR measurements, please use that technique in reporting. If not, and you have a receiver with a relative signal level meter, use **actual** meter readings in reporting. If neither applies, use "B" (better), "S" (same) or "W" (worse) indication on F3R **only** since your reference will be F1 signals.

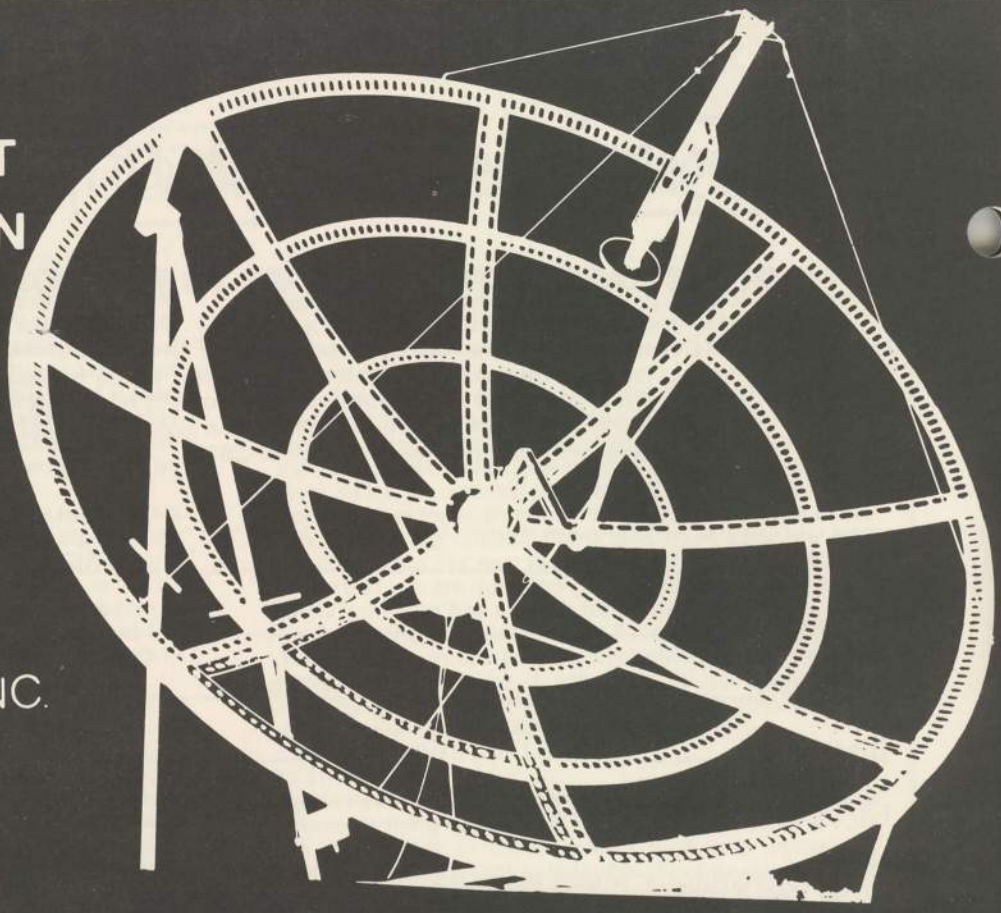
If your receiver has a dual purpose meter (i.e. discriminator and signal level) be sure it is in signal mode!

Trivia and other observations:

_____

_____

A UNIQUE CONCEPT IN ANTENNA DESIGN



COMMPLUS
COMMUNICATIONS, INC.

RIGID AND LIGHTWEIGHT	—	8 cast aluminum sections offer maximum strength / minimum weight. Total weight 325 lbs.
LOW WIND RESISTANCE	—	High quality expanded aluminum reflector surface
EXACTING ACCURACY	—	Cast aluminum sections ensure excellent production accuracy
EASY ASSEMBLY	—	Two or three hours - two persons
EASY SHIPPING	—	Packs in a 7' x 5' x 3' crate
COMPLETE PACKAGE	—	Includes reflector, tracking polar mount, prime focus feed and L.N.A. rotator
EXPANDABLE	—	Additional bolt-on sections allow expansion to 15 feet

TECHNICAL SPECIFICATIONS

12 foot diameter
41 dB gain
1.5° Beamwidth (-3dB)
Prime Focus Feed
125 MPH Wind Survival
Tracking Polar Mount
25° — 60° Latitude
Look angles to 10°

DISTRIBUTED BY:

SATCOM USA LTD — PALENVILLE, NEW YORK

SATCOM CANADA — DIVISION DE 104157 CANADA INC.

ALL INQUIRIES TO SATCOM CANADA 1140 Claire Cr., Montreal, Que. H8S 1A1 Tel.: (514) 634-7177

Early on, RCA **did promise** that by re-directing the boresight slightly to the south and east they did **expect** to bring up signal levels in the southern portions of Florida by as much as 2 dB. This has always been a tricky area, where relatively low look angles plus reduced footprint levels create difficult reception conditions. That announcement has not been repeated since the loss of F3, however, and whether that is the intention of RCA with F3**R** remains to be seen. The fact is, in spite of the best intentions, the **real** service areas from F3R will not be known until we have the bird fully operational, and there are hundreds of detailed **CSD** reporting forms filled out and turned in for analysis. One thing we can look forward to however - an interesting week or two, and a whole new set of experiences as the cable industry's use of satellites moves into "phase three" of growth.

Also Ahead

The mid-October launch and successful deployment of F3R will be but the first of four "of-interest" launches in the coming 12 months or so. At the present time the launch of F4, to 83 degrees west, is scheduled for December and it should become fully operational in March of 1982. F4, you will recall, is scheduled now to become the "CableNet 2" bird; to take over the traffic load from COMSTAR D2/(D1) and to allow additional new cable services to reach the nation's cable TV headends. Following closely on the heels of F4 will be the Western Union W4 bird, to be 24 channels, and to replace the present W1 bird at 99 degrees west. Launch is scheduled for February and operational in May of 1982. With the additional transponders available, W4 will become a significant "video bird" late in the spring. Later in 1982, November is a good guess now, Western Union will replace W2 at 123 degrees with another 24 channel bird (W5). It is on the combination of W4 and W5 that Westinghouse has "reserved" ten channels for video.

Thus the experience the industry gains wih the F3R replacement exercise will merely become the "proving grounds' for an entire new world of video to become available in the coming months. Who will be the first to receive a test transmission from the new F3R? We'll all know in a few months.

COMPARISON OF SPHERICAL FEEDS

by
M. L. Gustafson
San Jose, CA 95110

For my first TVRO system I managed to barter and trade technical services for most of the needed components, but alas, I was not able to come up with an antenna. So I parted with hard earned cash to acquire a slightly used Vidiark 12 foot Spherical reflector. I knew and understood the traditional parabolic antenna, but the Spherical was new to me. Having acquired the used 12 footer without a feed, I ordered the feed from Vidiark and proceeded to start studying available reference sources on the Spherical design.

Shortly after the horn arrived I had pictures. But, as is the case with most new self-done systems, they were pictures that could only be appreciated by the designer-builder. And after a few weeks of viewing even **this** designer-builder began to appreciate that the quality was not the best. Having already tweaked the reflector surface as closely as possible, the attention then turned to the feedhorn (system). It was about the this time I discovered an article in **CSD** discussing feedhorns for my type of reflector. I immediately scouted the local area to see if I could locate a Tristar Spherical feed. I did locate one, and at the same time I learned that Chaparral had a new proto-type Spherical feed as well. This, then, seemed like an opportunity to perform extensive tests between all three of the feeds designed for Spherical use: the standard horn, the Tristar feed and the Chaparral feed.

Figure 1 illustrates the test set up utilized. The Vidiark horn was used to establish a reference, against which the other two would be compared. The LNA was a Dexcel 120 degree, 50 dB gain, followed by 6 feet of RG-214, a DC power block, and a 3.7 to 4.2 GHz bandpass filter. This was followed by a Narda 0.1 dB step variable attenuator and finally a Gillaspie & Associates model 7500 receiver which has an excellent tracking field strength meter.

The reference (Vidiark) horn was installed and the highest signal strengths for both the vertical and horizontal polarized signals on FI logged. Then the Tristar feed was put on in place of the reference horn and the variable attenuator was adjusted to return both of the logged reference signals back to the levels noted with the reference horn. This sequence was repeated three times to allow any signal variations, eyeball error averaging and other anomalies to "wash out". The same sequence was repeated for the Chaparral Spherical feed.

The whole sequence of installing each feed, making three descrete measurements on the strongest vertical and strongest horizontal transponders, was repeated **three** times on **three** different days. After each test of the Tristar and Chaparral feeds, the reference horn was re-installed to validate that the reference numbers were still good. The results were then simply averaged and are shown here as **table 1**.

TABLE ONE

Polarity	Ref. Horn	Tristar	Chaparral
Vertical	0 dB	0 dB	+1.2 dB
Horizontal	0 dB	0 dB	+1.2 dB

As will be noted in table 1, no signal improvement could be measured with the Tristar Spherical feedhorn. The Chaparral feedhorn showed a 1.2 dB improvement over both of these feeds (*). From a purely subjective point of view, the quality of the picture with the Tristar looked identical to the reference horn. The Chaparral, however, improved the picture quality to the point that my wife asked when I would be moving the system from my lab into the living room. Progress at last!

While I had possession of the Chaparral proto-type feed, Jack Trollman and I decided to measure the noise temperature of the Spherical antenna using both the standard horn and the Chaparral super feed. A separate report is being prepared on that subject (**).

*** - CSD evaluated the Tristar Spherical feed earlier this year and found it to be** +0.85 dB (average) **"hotter" than the standard Vidiark feed. Our tests however are marred by what later turned out to be a badly warped Vidiark 12 foot antenna. Gustafson and Trollman are certainly capable**

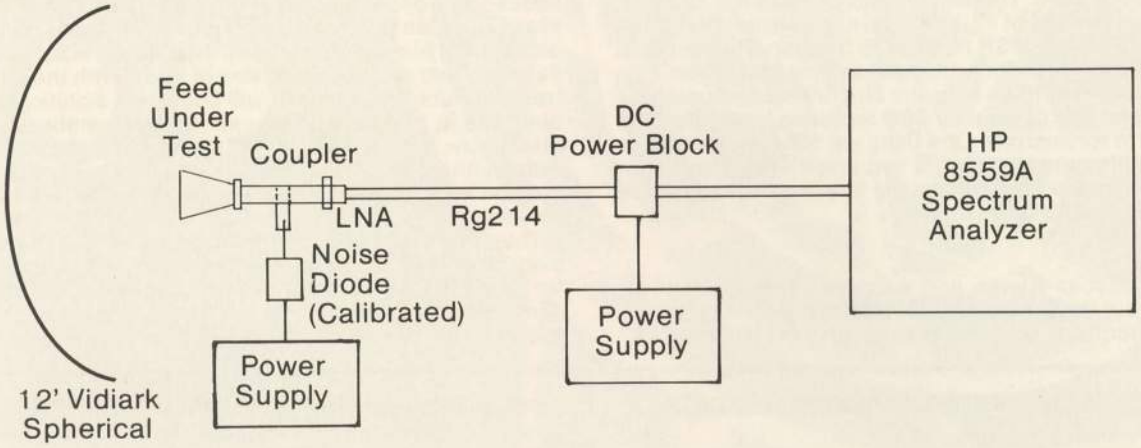


FIGURE ONE / ANTENNA NOISE TEST

of conducting proper A-B-C- tests and we have no quarrel with their methodology. We are interested in hearing from others **who have done direct comparisons between the Tristar and the standard Vidiark horn since we have some difficulty accepting that the Tristar shows** "no improvement" **over a standard horn.**

**** - Spherical "noise temperatures"** (the figure of merit for antenna rejection of unwanted earth noise) **has long been a controversial subject. Most "wisdom" suggests that Spherical reflectors will exhibit a higher G/T** (figure of merit) **than a comparable sized parabolic reflector.**

THOSE WHO DISPLAYED IN OMAHA

ANIXTER-MARK - 4711 Golf Road, Skokie, IL (312-298-9420) Total systems. Raymond J. Geraci, Carlyn Buchanan, Jerry Howard, Sigfried Alexejew.

ANTENNA DEVELOPMENT & MANUFACTURING, INC. - P. O. Box 1178, Poplar Bluff, MO 63901 (314-785-5988) Total systems. James Gowen, Linda Gowen, Jerry Morgan, David Shumate, Linda Shumate.

ANTENNA TECHNOLOGY CORP. - 895 Central Florida Parkway, Orlando, FL 32809 (305-851-1112) Antennas. Eugene P. Augustin, Robert Mahaun, David DePue, Michael Oliver.

ACTIVE SATELLITE MANUFACTURING - P. O. Box 544, Nisswa, MN 56468 (214-963-2261) Total systems. Stuart W. Smith, Kathy Smith, Don Walsh.

ADVANCED ELECTRONICS, INC. - 5085 S. Arville St., Las Vegas, NV 89118 (702-871-8766) Total systems. Jeff Stouffer, Janna Anderson, Howard L. Wilson.

AVANTEK, INC. - 3175 Bowers Ave., San Jose, CA 95051 (408-727-0700) LNA's, VTO's. Anne Monson, Barry Bakner, Dave Stogner.

AVCOM OF VIRGINIA, INC. - 500 Research Road, Richmond, VA 23235 (804-794-2539) Total systems. Andy Hatfield, Pat Hatfield, John McLean, Sandy Cottrell.

COMTECH ANTENNA CORP. - P. O. Box 428, St. Cloud, FL 32769 (305-892-6111) Antennas. Glenn F. Higgins, George Birutis, Donald Sipes.

COOP'S SATELLITE DIGEST - P. O. Box G, Arcadia, OK 73007 (405-396-2574) Susan, Tasha, Kevin and Bob Cooper.

DEEP SPACE COMMUNICATIONS, INC. - Rt. 1, Box 351A, Chancellor, AL 36316 (205-393-3211) Total systems. Dave Braswell, Margaret Braswell, Jim Goodson, Frank Lambert.

DEXCEL, INC. - 2285-C Martin Avenue, Santa Clara, CA 95050 (408-727-9833) LNA's, receivers. Art Kawai, Yozo Satoda, Fred Graham.

EARTH STATIONS, INC. - Hwy. 22, Barling, AR 72923 (501-452-4391) Total systems. Bob Beaty, A. B. Richmond, Stanley Johnson.

EARTH TERMINALS, INC. - 255 Northland Blvd., Cincinnati, OH 45246 (513-772-6900) Receivers. William L. Gaible, James Jaegar, Clyde Washburn, Steve Corwin.

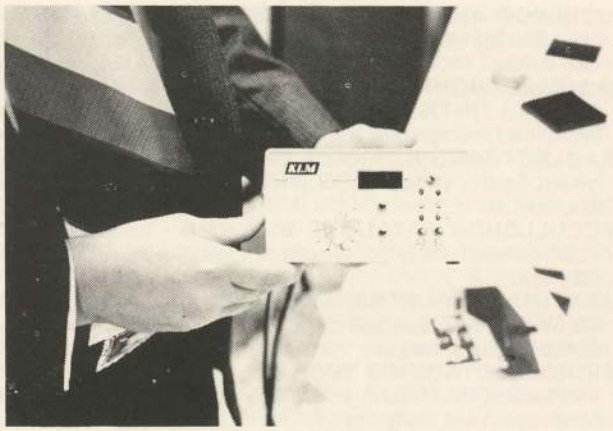
ECHOSPHERE CORPORATION - 5315 S. Broadway, Littleton, CO 80120 (303-797-3231) Total systems. Candy McAdam, Charlie Ergen, James DeFranco, Alan Beauchamp.

EQUINOX SALES CORPORATION - P. O. Box 24374, Oakland, CA 94623 (415-893-0668) Total systems. Richard C. Hansen, R. Mason Truluck, Lou Kirby.

GHOST FIGHTERS TV ANTENNA SPECIALISTS - P. O. Box 8136, Missoula, MT 59807 (406-543-4333) Antennas. Jim Anderson, Rick Trauth, Marion Nelson.

GILLASPIE & ASSOCIATES, INC. - 177 Webster Street, Suite A455, Monterey, CA 93940 (408-372-4771) Total systems. Norman Gillaspie, Werner Vavken, Lydia Gillaspie, Sheri Vavken, Ben Guill, Paul Byrnes.

GLOBAL TV ELECTRONICS, INC. - P. O. Box 219-R, Maitland, FL 32751 (305-628-2088) Total systems, Steve Reed, John Reed, Scott McNealus.



KLM MOUNT for motor driven azimuth / elevation control is rugged and very well designed. It should do well in marketplace.

HAMILTON SATELLITE SYSTEMS, INC. - 1101 E. Chestnut Street, Suite A, Santa Ana, CA 92701 (714-543-5217) Total systems. Gay M. Hamilton, James Matheson.

HASTINGS ANTENNA CO. - 847 West 1st, Hastings, NE 68901 (402-462-5565) Total systems. Dale Curtis, Paul Hohnstien, Will Jensbie, Harry Schartzkopf.

H & R COMMUNICATIONS - Route 3, Box 103-G, Pocahontas, AR 72455 (501-647-2291) Total systems. John Hastings, Jr., Virgil Richardson, Randy Thompson, Ann Hastings, Larry Poe, Robert Coleman, Lib Coleman,

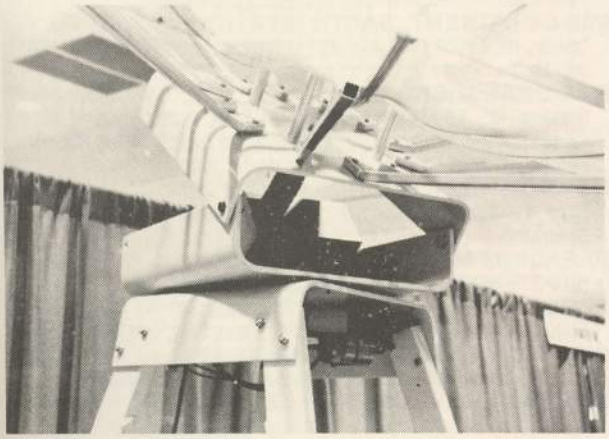
HERO COMMUNICATIONS - 1783 West 32nd Place, Hialeah, FL 33012 (305-887-3203) Total systems. Robert Behar, Gary Willhoite, Estrella Behar, Yuri Delgado.

HOOSIER ELECTRONICS INC. - P. O. Box 3300, Terre Haute, IN 47803 (812-238-1456) LNA's. Receivers. Steve Bland, Norman Bland, Jeff Vicars.

INTERNATIONAL CRYSTAL MFG. CO., INC. - 10 North Lee, Oklahoma City, OK 73102 (405-236-3741) Receivers. Royden Freeland, Charles Feverborn, Paul Denwalt.

INDUSTRIAL SCIENTIFIC - 5401 Del Rey, Las Vegas, NV 89102 (702-870-3373) Total systems. Paul V. Wells, Jackilene Dietrich, Donald Scheibel.

INTERNATIONAL VIDEO COMMUNMICATIONS - 4005 Landski, North Little Rock, AR 72204 (501-771-2800) Total systems. Gene Mullenex, Tom Hunt, Don Chastick.



CONTROL BOX for KLM Azimuth / Elevation motor driven antenna tracking system.

The ICM TV-4400 Satellite Television Receiver System

- New Design
- Improved Selectivity
- Built-in Bandpass Filter
- Built-in D.C. Block

The ICM TV-4400 offers advanced receiving techniques that improves satellite TV reception. The "system" consists of two units. The smaller of the two is the RF downconverter which is enclosed in a environmental protective box (3" x 4" x 7"). The double conversion RF downconverter is intended to be mounted at the antenna site as close as possible to the LNA. The advantage . . . cable losses at the high frequency are negligible.

The baseband receiver unit (3½" x 8" x 8") has 6.2 or 6.8 MHz audio selector switch, channel step tuning selector, fine tuning, power switch, all on front panel.

Features include: Automatic frequency control, automatic gain control, standard video output, subcarrier output for future accessories, wideband phase lock loop demodulator, internal selectable video polarity, internal audio and video controls, provisions for RF modulator. Receiver is equipped with a standard jack for optional remote control.

$1,395.00

Quantity Discounts Available

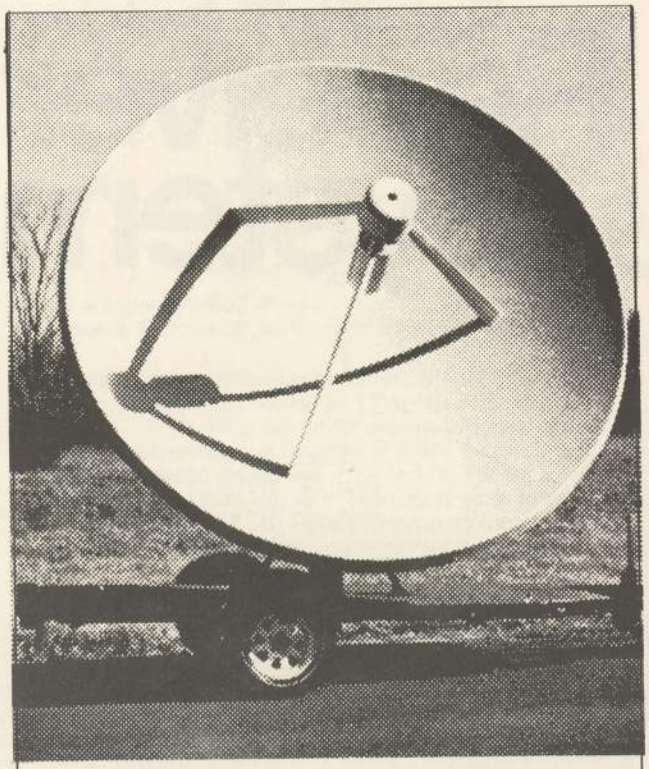
OPTIONS:

REMOTE CONTROL UNIT **$109.45**

TUNABLE AUDIO UNIT **$189.95**

ICM

INTERNATIONAL CRYSTAL MFG. CO., INC.
10 North Lee, Oklahoma City, Oklahoma 73102
405/236-3741



Open up the sky...

With complete earth stations from Mid-America Video.

Now you can get far better reception on your home television than you ever thought possible, with your own satellite receiving system. Receive programs from 11 satellites, unedited by network and cable services. View movies, uncut news, Las Vegas shows, sports events not on commercial TV, and much more.

TOLL FREE
1-800-643-5514

Mid America Video Corporation
P.O. Box 511
North Little Rock, AR 72115
(501) 753-3555

KICKAPOO ANTENNAVISION INC. - P. O. Box 58, Prairie du Chien, WI 53821 (608-326-2211) Receivers. Fay Grim, Richard Hagensick, Gary D. Grim.

KLM ELECTRONICS, INC. - 1170025 Laurel Road, Morgan Hill, CA 95037 (408-779-7363) Total systems. Peter J. Dalton, David Barker, Grant Bright, Andy Anderson, Robert Dalton.

MA ELECTRONICS CANADA LTD. - 3135 Universal Drive, Mississauga, Ontario, Canada L4X2E7 (416-625-4605) LNA's. Brian C. Dinsdale, Phil Cox.

MCCULLOUGH SATELLITE SYSTEMS - Box 97, Salem, AR 72576 (501-895-3167) Total systems. H. D. McCullough, John McCullough, Larry Cox.

MERRIMAC INDUSTRIES, INC. - 41 Fairfield Place, P. O. Box 986, West Caldwell, NJ 07006 (201-575-1300) Receivers, Power Splitters. Dan Loder, Dan S. Brodow.

MICROELECTRONICS TECHNOLOGY COMPANY - 2446 Watson Court, Palo Alto, CA 94303 (415-856-0300) Microcircuits. John Stover, Lou Dorren, Wally Resnick.

MICROSAT - Route 47, Washington Depot, CT 06794 (203-868-0503) Total systems. William Erbs, Harry Erbs, Millie Erbs.

MICROWAVE ASSOCIATES COMMUNICATIONS5 - 5803 Sovereign Road, Suite 206, Houston, TX 77036 (713-995-7070) Total systems. Tom Humphries, Charles Stanton, Pat Faris, Paul Fisher.

MICROWAVE GENERAL - 1100 A Lavenida Avenue, Mountain View, CA 94043 (415-969-3355) Total systems. Don Koijane, Chuck Colby, Frank

Foge, Andrew Koijane, Chris Kelly, Alicia Koijane, Carol Colby, Bob Shapiro, Connie Foge.

MID AMERICA VIDEO - 324 Pershing Blvd., North Little Rock, AR 72204 (501-753-3555) Total systems. Lon Sheridan.

MID-CONTINENT EARTH STATIONS - P. O. Box 81673, Lincoln, NE 68501 (402-476-2211) Total systems. Rick Martin, Bob Lehr, Bob Martin.

NATIONAL MICROTECH, INC. - Hwy. 12 West, Grenada Plaza, Grenada, MS 38901 (800-647-6144) Total systems. David M. Fedric, Horton Townes, Joe Garner, Bill Ferguson, Martha Ray Fedric, Hollis Morrow, Guy Davis, Peter Chanky, Jim Rothbart, Dr. Robert Arn.

NEWTON ELECTRONICS, INC. - 2218 Old Middlefield Way, Suite 1, Mountain View, CA 94043 (408-224-2132) Satellite Signal Generators.

PARADIGM MFG. INC. - 2962 Cascade Blvd., Redding, CA 96003 (916-275-6676) Antennas. David Johnson, Bill Marsh.

PRODELIN INC. - P. O. Box 131, Highstown, NJ 08520 (609-448-2800) Antennas, Mount Systems. Bill Dixon, Fred Kazalski, Jerry Cole.

QUANTUM ASSOCIATES - Box 18, Alpine, WY 83128 (307-654-2000) Rotating Antenna Drives. Alvin C. Gaub, Dan Rollins, Jay Rollins.

RIVERWAYS INDUSTRIES - P. O. Box 1047, Poplar Bluff, MO 63901 (314-686-4442) Total systems. Dennis Albright, John L. Hunt, Clif Luttrull.

R. L. DRAKE COMPANY - 540 Richard Street, Miamisburg, OH 45342 (513-866-2421) Total systems. Mike Brubaker, Steve Koogler, Merl Powell.

ROBERT LULY AND ASSOCIATES - P. O. Box 2311, San Bernadino, CA 92406 (714-888-7525) Antennas. Robert Luly, Van Luly.

SATCOM CANADA / USA - 1140 Claire Cr., Lachine, Quebec, Canada H8S 1A1 (514-634-7177) Total systems. Rick Hebert, Chris Schultheiss, Mike Jurgenliemk, Dan Bernesi.

SATELLITE SUPPLIES, INC. - 164-B Gilman Avenue, Campbell, CA 95008 (408-370-1515) Receivers. Tom McArdle, Bob Bendorf.

SATELLITE TELEVISION TECHNOLOGY - P. O. Box G, Arcadia, OK 73007 (405-396-2574) Gloria Schneringer and Rodney and Dorothy Riddle.

SATFINDER SYSTEMS - 5146 South 94th E. Avenue, Tulsa, OK 74145 (918-664-4466) Total systems. Kay Feeback, Wilma Schindeler, David MacZura, Larry James, Jim MacKerelle.

SAT SHARE, INC. - 5301 Hollister, Houston, TX 77080 (713-460-9900) Total systems. Nelson Thibodeaux, Dan Cromwell, Ray Heinsohn, Wayne William.

SAT-TEC SYSTEMS DIV. RAMSEY ELECTRONICS INC. - 2575 Baird Road, Penfield, NY 14526 (716-386-3950) Receivers. John Ramsey, Mike Leo.

SELECTVIEW & VALLEY PRODUCTS CORP. - P. O. Box 668, Valley, NE 68064 (402-359-2556) Total systems. J. T. Daugherty, Jim Baber, Michele Schreck.

SATELINC - Riverside Drive, Chestertown, NY 12817 (518-494-4151) Total Systems. Eugene E. Lewis, Jason Minick, Ron Stewart, Nancy Lewis.

S.P.A.C.E. - Craig Howard

SPACECOM - 860 West Riverdale Road, #D-8, Riverdale, UT 84402 (801-621-7950) Receivers. Royce Kruger, Mark C. Bates, Wayne Porter.

STAR TRAK SYSTEMS, INC. - 404 Arrawanna Street, Colorado Springs, CO 80909 (303-475-7050) Total systems. Robby Staver, Reg Dudley, Dave Miller.

STARVIEW OF TEXAS, INC. - 15304 Midway Road, Dallas, TX 75234 (214-934-9126) Total systems. James J. Redmond, Jeff Smiley, Stacy Petersen.

STRATOVISION, INC. - P. O. Box 832, Jacksonville, AR 72076 (501-985-1589) Total systems. Bob Heinrich, John Lowry, Ron Morgan, Larry Duke.

TELECOM INDUSTRIES CORPORATION - 27 Bonaventura Drive, San Jose, CA 95134 (408-262-3100) Receivers. James G. Bertonis, Andrew Gibbs, Bob Broner.

TRANS-SAT CORP. - P. O. Box 14, Junction, TX 76849 (915-446-2626) Antennas. Joe Burkholder, Randy Nolte, Jeannie Burkholder.

TV SATELLITE SYSTEMS, INC. - 49 Novner Drive, Cincinnati, OH 45215 (513-772-6565) Total systems. Howard Friedman.

UNIVERSAL SATELLITE SYSTEMS Div. of DOUG's INC. - St. Hilaire, MN 56754 (218-964-5604) Total systems. Doug Denhert, Paulette Dehnert, Richard C. Anderson.

UNR-ROHN - P. O. Box 2000, Peoria, IL 61656 (309-697-4400) Communication Towers. Lisa Rhodes, Mike Fleissner, Larry Grimes.

VAN'S ELECTRONICS - 1840 N. Tustin Avenue, Orange, CA 92665 (714-637-8030) Total systems. Dennis Vanderzyl, Rich Galvin.

SATELLITE CHANNEL CHART®

THE MOST ACCURATE AND UP-TO-THE-MINUTE LISTING OF ALL PROGRAMMING SOURCES AVAILABLE ON THE SATELLITES

Vol. 1, No. 5 SEPT /OCT 1981 Issued 9-1-81

RCA SATCOM 1 (135°W) Polarization: ODD-Vertical EVEN—Horizontal

TR—1 NICKELODEON—premium children's programming (6 8)
ARTS (Alpha Repertory Television Service)—performing and cultural arts programming (5 8)
TR—2 PTL (People That Love)—religious (6 8)
TR—3 WGN—TV, Chicago—Midwest's leading independent station (6 8)
TR—5 THE MOVIE CHANNEL—24 hr/day first-run movies (5 8)
TR—6 WTBS, Atlanta—Ted Turner's Superstation
TR—7 ESPN (Entertainment & Sports Network)—24 hr/day sports (5 8)
TR—8 CBN (Christian Broadcasting Network)—religious (6 8)
TR—9 C-SPAN—live coverage from the House of Representatives (6 8)
USA NETWORK—professional sporting events, Calliope, and the English Channel (6 8)
BET (Black Entertainment Network) (6 8)
TR—10 SHOWTIME (West)—first-run movies, entertainment specials (6 8)
TR—11 MTV (Music Television)—Pop/Rock Video (5 8 & 6 62 stereo)
TR—12 SHOWTIME (East)—first-run movies, entertainment specials (6 8)
TR—14 CNN (Cable News Network)—24 hr/day news (6 8)
TR—15 OCCASIONAL TRANSMISSIONS—sporting events, news & network feeds (6 2/6 8)
TR—16 SHOWTIME (Spare)—occasional network, remote and sports events feeds (6 8)
AETN (American Educational Television Network) (6 8)
CMN (Christian Media Network)—religious (6 8)
NJT (National Jewish Television)—religious (6 8)
TR—17 WOR-TV, New York—the Big Apple's top independent station (6 8)
TR—18 REUTER'S MONITOR SERVICE—commodity/stock market information (digital video)
GALAVISION—the best in Spanish-oriented programming (6 8)
TR—19 THE SHOPPING CHANNEL—Shop-at-Home TV service (6 8)
SPOTLIGHT—first-run movies (6 8)
TR—20 HOME BOX OFFICE CINEMAX (East)—time-structured HBO (6 8)
TR—21 HTN (Home Theatre Network)—quality R and PG movies (6 8)
THE WEATHER CHANNEL (est. Spring 1982)
TR—22 HBO (Home Box Office) (West)—first-run movies, sports & entertainment specials (6 8)
MSN (Modern Satellite Network)—general entertainment (6 8)
BETA—programming for women (est. 1-4-82)
TR—23 HBO CINEMAX (West)—time-structured HBO (6 8)
TR—24 HBO (East)—first-run movies, sports & entertainment specials (6 8)

Audio Services on SATCOM 1

TR—2 SATELLITE RADIO NETWORK (6 2)
TR—3 WFMT[FM], Chicago (5 8 stereo)
Seeburg's "LIFESTYLE" Music (7 6)

3.00

Q: Who's on WESTAR 3, Transponder 12?

A: Private Screenings, EWT (Eternal Word TV), Studio "B" (Health Science), Occasional Transmissions.

With WESTAT's Satellite Channel Chart® you'll know the answer to this as well as 105 other programmers on the 77 active transponders from all of the North American Satellites.

- the most accurate and comprehensive listing available anywhere, and it's completely updated every other month for continued accuracy.
- includes:
  - audio subcarriers for EACH programming service.
  - polarization for each satellite and transponder.
  - conversion transponder numbers to dial number for WESTAR and ANIK satellites.
  - position location for each satellite.
  - printed on 8-1/2"x11", high-quality, thick silk finish stock.

SUBSCRIBE NOW & KEEP UP WITH WHAT'S UP.
1 - YEAR SUBSCRIPTION (6 ISSUES): $15.

WESTSAT COMMUNICATIONS
P.O. Box 434 • Pleasanton, CA 94566
(415) 846-7380

FREE SATELLITE PRO FOOTBALL GAME SCHEDULE WITH EVERY SUBSCRIPTION

APPLIED INVENTION THE SOURCE FOR SOLID STATE STATE-OF-THE-ART

GaAs FETS by MITSUBISHI

NOW!! — EVEN LOWER PRICES

MGF 1200 - $13.00 MGF 1400 - $19.00 MGF 1402 -$33.75
MGF 1412 (0.8db NF at 4GHz) - $61.00 MGF 1403 (1.8db NF at 12 GHz) - $108.
All devices in stock. Quantity discounts available. Complete data.

Microwave Modules

X BAND **very** high stability GaAs FET / Dielectric Resonator oscillators

NEW from MITSUBISHI FO-1010X 15mw transmitter, 10-11GHz, 0.12MHz/C° $37.50
FO-UP11KF heterodyne receiver, 10-11GHz $34.50

Components

MICROWAVE CHIP CAPACITORS VITRAMON Vee Jem 7800 series for bypass/coupling
7800P7G08 1.1-1.7GHz 7800P7G04 1.3 - 2.6GHz 7800P7G01 2.6 - 4.2GHz
5 for $5.00 no mixing. With series data provided

SOLDER-IN DISK CAPACITORS for VHF-UHF bypassing RMC JF series
100, 220, 470, 680pf 10 for $2.50

THERMOELECTRIC COOLERS: MELCOR FRIGICHIP

MINIMUM ORDER $5.00 ADD $2.00 POSTAGE & HANDLING
N.Y STATE RESIDENTS ADD 6% SALES TAX SEND S.A.S.E. FOR CATALOG

R.D.2 ROUTE 21 HILLSDALE, NY 12529 518-325-3911

DEALERS!

Are you tired of buying more inventory than you need just to obtain profitable sales margins?

Are you tired of funding other peoples' business with your pre-payments, and then not getting delivery?

Give us a call, we'll try to help you start or stay in the Satellite TV business — profitably.

We wholesale only the most feature/cost effective products by such well known manufacturers as AMERICAN ANTENNA IND., AMPHENOL, AMPLICA, COMTECH, DEXCEL, PANASONIC, RCA, RLC, WILSON MICROWAVE, — and all at extremely competitive prices.

SPECIAL THIS MONTH!

Amplica LNA 100°K (ACD-305326) . . $897
Amplica LNA 120°K (ACD-305328) . . $604

HIGH FRONTIER CORPORATION

2230 E. Indian School Road/Phoenix, Arizona 85016
(602) 954-6008

VECTOR SYSTEMS, INC. - 519 E. Broadway, Newport, TN 37821 (615-623-4420) Antenna Mount Control System. Joseph I. Overholt, Jim Callahan, Gene Brannam.

VIDEO PRODUCT NEWS - P. O. Box 2772, Palm Springs, CA 92263 (714-323-2000) Publications. Steve Tolin, Mike Murashho, Bill Kaprelian, Debbie Kent.

W.H.D. SATELLITE TV SALES & SERVICE - 860 Speedway Road, Roseburg, OR 97470 (503-679-6566) Receivers. Gary Denny, Zdenek Antoch, Danny Wilson.

WILSON MICROWAVE SYSTEMS, INC. - 4286 S. Polaris Avenue, Las Vegas, NV 89103 (800-634-6898) Total systems. Jim Wilson, Jerry Flatt, Al Tamura.

WINEGARD COMPANY - 3000 Kirkwood, Burlington, IA 52601 (319-753-0121) Total systems. John T. Schweizer, Hans Rabong, Gil Cunningham, Ernie Voigt.

TECHNICAL CORRESPONDENCE AND NOTES

NO FREE LUNCH?

Where you stop to think about it, there is no free lunch. I am referencing your description of the so-called amazing and "magic" new system that might solve most of the problems associated with satellite signal distribution (see August 1981, page T3). Did you forget to mention the cost of the "slave converters"; with one needed at each home? This should open up a whole new industry for TV servicemen!

It occurs to me that I could put in a 20 channel satellite receiver system for the approximately $15,000 you mention. I It would take a dish, LNA, down converter and 20 inexpensive receivers. And 20 modulators for CATV channels. Now I would have something which the "subscriber" could use without having to employ a "slave converter" at each location. Selective security could be employed, if desired, on certain channels. Heaven forbid if I had to maintain 1,000 or more of those little black and white receivers! Also, the slave black and white units could probably be broken into by some enterprising electronic hobbiest and there goes the ball game; wholesale duplication!

The bottom line seems to be that it seems we should not rush into something. This industry is too blue sky already, without adding more. There is no "magic". When words like that are used in a report, I get suspicious; although I accept that there are probably some real break throughs in the SCDN system.

Al Braun
Alaun Engineering
Montrose, CA 91020

Although we question your math, your points are well taken. One of the "clever" things the SCDN system does is "transfer" a chunk of the initial capital expenditure for a shared system evenly to the users. It also transfers the cost of a major source of maintenance (the in home slave units) **to the same users. That may not be all bad.** "Magic",

on re-consideration, may have been a poorly chosen word. The real problem we **had in writing about this originally is that we were shown** exactly **how it worked, and then sworn not to write about it. That left us having to "cook up" easily identifiable words that we thought everyone would understand, to describe the system best we could, without** giving away **the proprietary secrets. Some day, perhaps soon, we'll be freer to write in greater detail about how all of this came about. Our tentative title is** "The Bobbsy Twins Buy A Jet Airplane".

DISH ELEVATION

I have been involved in satellite TV since the first SPTS in Oklahoma City. My installation required some very unique "engineering" since I have the problem of looking "over" neighboring homes to see F1 or any other bird to the southwest. Everything I looked at was going to be far too expensive, until one day I was driving down the road and spotted a construction crane (with boom) at work. I headed home and spent several hours on the telephone calling every contractor listed; and finally spotted a scrap 12 foot crane boom section. I bought it at scrap prices and that's what you see in the photo.

I have **CSD** from issue "one" and so far have not seen anyone with a problem like this one, solved. I also have a complete photo album showing the process I went through to get my dish onto the mount, and operational. Is there interest in an article describing it? Perhaps others, with similar problems, would profit from seeing it in print.

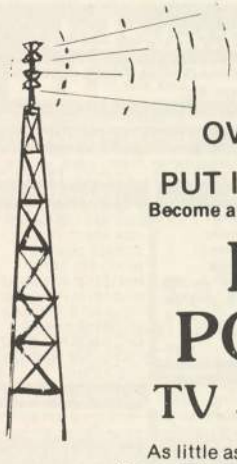
Ron Pasquinelli
Portsmouth, Ohio

You bet! There's a chap in Amarillo who started working on a similar problem about a year ago, and another in Dubuque, Iowa who mounted his 10 foot SatFinder dish up on a post to clear his garage. Let's have your article Ron as we are sure the problem is much more common than printed reports to date would indicate.

BIRDS ON BOATS?

Myself and a few others on our ship are interested in the feasibility of getting a satellite TV receiver system operational on board a ship. Before we can present a solid request to the Command, however, we need more information on the equipment involved. Our ship is a destroyer and about half the crew have electronic related jobs. I'm the only one with formal television training however; limited to closed circuit applications. HAs anyone attempted this before?

John Stanley, IC2
USS Wm. V. Pratt (DDG-44)
FPO Miami, 34092

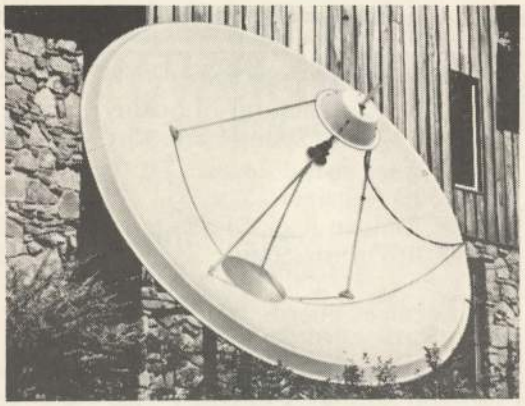


OWN A TVRO?
WHY NOT
PUT IT ON THE AIR!
Become a Neighborhood Broadcaster.

LOW POWER TV STATION

As little as $5,000 total investment.
Cover 500 Sq. Miles Up with your TVRO!
Costs as little as $10.00/mo. to operate.
Get donations, operate as scrambled Pay TV. Sell advertising and broadcast time to others. Some Satellite Channels will **pay you** to rebroadcast. Once in a lifetime opportunity, get in now!

"How to" manual, $25.00
Industry Magazine, $50.00 per year.
Channels already applied for, listed $15.00.
Denver Lo-Power Seminar, July 25-26, $100.00.
LO-POWER COMMUNITY TV
7432 E. Diamond, Scottsdale, AZ 85257
Phone COD Orders: [602] 945-6746



WHY PAY MORE?

YOU CAN NOW BUY DIRECT FROM THE FACTORY AND SAVE. 10 FT. PARABOLIC DISH WITH FIBERGLASS CONTRUCTION, IN 4 SECTIONS.

40 dB GAIN
F to D RATIO .30
FOCAL LENGTH - 25" **$795.00**

CALL US TODAY FOR QUANTITY DISCOUNTS

EASTRIDGE SATELLITE SYSTEMS
P. O. DRAWER O
HIGHWAY 35 SOUTH
CHARLESTON, MISSISSIPPI 38921
Phone: (601) 647-3406

Alaska Microwave Labs

4335 E. 5TH STREET ANCHORAGE, ALASKA 99504
(907) 338-0340

NO WARRANTY ON SEMI-CONDUCTORS

CHIP RESISTORS
50 OHM 1/2 Watt $1.50

PISTON TRIMMERS
Triko 201-01M .5-3Pf, 1-8Pf, .3-1.8Pf $2.50

COAX CONNECTORS

BNC
Chassis mt. sq. flange $1.95
Plug for RG-58 $1.95
SMA
Chassis mt. sq. flange $6.10
Chassis mt. plug sq. flange $8.50
Chassis mt. strip-line tab $6.75
Plug for RG-58 $6.75
Plug for RG-174 $6.75
Plug for .141 semi-rigid $3.98
Type N
Chassis mt. sq. flange $3.25
Plug for RG-9/RG-8 $3.75
Double Male $7.25

RF-CABLE
.141 Semi-rigid Cable
Approx .24DB Loss per 100 ft @4GHZ price is per ft plus/ -1/4 inch max length is 5 ft. Other lengths by special order $4.00

FEED-THRU CAPACITORS
1000 Pf Solder Type $.50
470 Pf Solder Type $.50

RF - IF I.C.
NEC MC 5121 75 OHM 4 terminal in, out, GND, & VCC 30 to 890 MHZ plus/- 1DB Typ 27DB gain plus 20V VCC $13.00
NE 564 PLL $7.65
NE 592 Video AMP $1.75
MC1358 (CA3065) TV Sound System $2.50

TEFLON CIRCUIT BOARD
Approx 3.25"x5.0"x.010 $5.50
Approx 3.25"x5.0"x.0312 $6.50
Approx 3.25"x5.0"x.0625 $10.50

HOT CARRIER DIODES
MBD 101 UHF-Micro $1.50
ND4131
4GHZ NF-5.75DB $21.00
HN-1 4GHZ NF-6.5DB $2.00

FERRITE ISOLATORS
3.7 to 4.2 GHZ MAX Loss .4DB - Isolation 20DB min. VSWR 1.25 MAX $115.00

TRANSISTORS
MRF 901 FT4.5 GHZ $3.00
MRF 911 FT5.0 GHZ $4.00
BRF90 FT5.0GHZ $3.00
BFR91 FT5.0GHZ $3.50
NEC 02137 FT4.5GHZ $3.25
NEC 02135 FT4.5GHZ Typ NF 2.7DB MAG 15DB @ 2.0GHZ $5.00
NEC 64535 FT8.5GHZ NF 2.0DB MAG 15DB @ 2.0GHZ $14.00

CHIP CAPACITORS
1.2, 2.2, 3.3, 4.7, 6.8, 10, 18, 22, 27, 47, 100, 120, 180, 220, 270, 330, 390, 470, 560, 680, 820, 1K, 1.2K, 1.8K, 3.9K, 8.2K, 10K, 100K $.60

GaAs FETS
MGF1400 NF 2.0 DB @4GHZ MAG 15DB $28.50
MGF1412 NF 0.8 DB @4GHZ MAG 18DB $75.00

DUAL GATE MOSFET
RCA 40673 $1.50

OPEN AT 8PM EST CLOSED 8PM PST

ORDERS ARE POSTAGE PAID
COD—VISA—MASTERCHARGE

IF YOU DO NOT SEE WHAT YOU WANT, ASK!

STAR TRAK SYSTEMS, Inc.

Manufacturer of quality
TVRO Systems and Kits

RLS 8530D Receiver	$1,695
ST 200C Deluxe Rack Mt. Rx.	$1,850
DS-108 10'8" Dish/Stand	$1,650

Receiver boards and kits available

404 Arrawanna St. 9-5 M-F
Colorado Springs, CO 80909 303—475-7050

ATTENTION

NOW — armchair automatic dish rotation made possible with the ever popular Sat-Finder Command Control. Only $795! Relay switching schematics and sensor details included. Retro-fits most polar mount systems.

SatFinder Systems
5146 South 94th East Avenue
Tulsa, OK 74145
918-664-4466

Marisat (navigational) **satellites, also in geo-stationary orbit, are tracked with elaborate "floating platforms" that gyro-out** (nullify) **the effects of the ship tossing and twisting in the sea. Most of us have a difficult enough time finding a stationary bird from a stationary piece of ground; adding into the equation tracking a stationary bird from a** moving **platform would certainly be an interesting challenge. Anyone have any ideas on doing this; cheaply?**

HOME BREW CASSEGRAIN

I could use a little help if someone who knows his antennas has a few minutes to spare. My TVRO station uses an 8 foot dish with a 3 foot prime focus giving an f/D ratio of .375. I have built it, however, as a cassegrain using a homebuilt classical hyperbola and a homebuilt feed horn. Right now my average picture is "almost" sparklie free. I think it can be better. My questions are these: **(1)** Has technology progressed to the point where I should be using a prime focus rather than a cassegrain feed? **(2)** Does someone (anyone) make accurate hyperbola reflectors for dishes? **(3)** Or, does somebody make a proper feed for my cassegrain fed hyperbola system? **(4)** Failing all of the above, where can I get good information on designing the proper quasi-hyperbola and associated feed horn? Finally, will the circular feed horns such as the Chapparal Super Feed improve reception when used with the cassegrain type antenna? I would be glad to pay a reasonable consulting fee for **good** answers, if somebody knows them.

Glenn E. Mysza
2007 Portsmouth Drive
Richardson, TX 75081

If you are "almost" **out of sparklies with an 8 footer in the Dallas area, you are doing something right! On paper, a properly designed cassegrain sub-reflector feed system should buy you perhaps 1.1 dB additional antenna efficiency. There is not much practical data available in literature we have seen on cassegrain sub reflectors and feeds, and we would welcome some knowledgeable reader spelling it out for all of us.**

BIRD OPERATIONAL NOTES

F1 CHANGES - delays in equipment arrivals kept WGN from adding additional music sub-carriers on TR3, on schedule. Should be operating when this appears. WGN change to new microwave link for improved Chicago to Lake Geneva (uplink) about complete. CBN's use of sub-carriers for music and news services still not operational on TR8. USA Network being sold on TR9; will effect C-SPAN long term use. The Music Channel's stereo system, using subs of 6.2 and 6.8, requires special decoders for quality reproduction. Most receivers cannot handle multi-plex format without minor

surgery. TR13, acquired by HBO in swap with Trinity, in semi-regular use for HBO **west**; being dual-fed with TR22 service. When F3R flies, TR22 will no longer be used for western HBO service. TR15 cleared of audio, narrow band services, now in occasional video use for news feeds; primarily Seattle's KOMO and Portland's KATU in evening period, plus some sports. SPOTLIGHT, Times Mirror movie service, now 24 hours per day on TR19. SPOTLIGHT feeds audio (occasionally stereo, when movie is so encoded) on 5.8, 6.2 plus normal 6.8 MHz subs. Cleanest audio typically 5.8.

LOW POWER TV virtually shut down in US while FCC attempts to unsnarl mess created by flood of applicants. It is likely to be a year or two before anything substantial begins to happen here. A dublin, Ireland entrepreneur, meanwhile, has put a VHF TV transmitter on the air from a hotel room (!), showing videotaped movies and other (often US) specials. Legal battles are following,and the station continues to operate.

ESPN's posture that it will not accept money for non-CATV viewers may have new problems; they are moving from "charging" to "paying" mode since their success is now bringing in lots of advertising. Keeping advertiser supported service out of public domain may be more difficult, legally, than keeping subscription service out of bounds.

GRAND OLD OPRY, using new ten meter uplink, may begin sending live programs to cable and TV stations very soon. Formal announcement of service expected this month; Westinghouse may become partner in venture, indicating Westar home eventually.

WARNER's The Music Channel could have competition soon; Heart Beat Music plans to announce a more adult (12 to 34 age bracket) music service this month.

NEW FLORIDA sports service should be on Westar 3, TR7 (13 on 24 channel receiver) 7 hours per evening when you see this. Southern Video Network, drawing from University of Florida, Florida State, three Florida based pro soccer teams, hopes to become first successful regional statellite delivered "ESPN" type service.

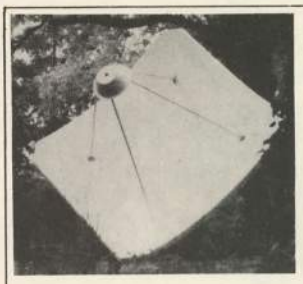
MORE DETAILS out for 1982 launch of Westinghouse/ABC satellite delivered, cable news service. Each cable firm using service will have a pair of TVRO receivers. One will lock on the "national feed". The other will be electronically cut into servie on one of three "regioal" news service channels. For six minutes each hour, each system will receive customized regional service fitted into the master hour. There are 24 regions nationwide, typically cutting across state lines. The total of five transponders will be used in this manner: One will be dedicate to the national service, one will be dedicated to getting news reports back into the national network headquarters in Stamford, CT. Three will be used for regional feeds. Regional feeds will last six minutes each, and 8 of the six minute regional casts will be "stacked" on each of the three regional transponders. Advertising will fill the remaining 12 minutes per hour, per transponder. Between the three dedicated-regional transponders, 24 regional casts per hour will be transmitted. Regional uplinks will come from leading TV stations who are serving as regional "partners" in venture. Some of the early announced partners include Boston's WBZ, KYZ Philadelphia, WEWS Cleveland, WMC Memphis, WNEW New York and KPIX San Francisco. Service will begin on Westar 4; may move to Westar 5 later in 1982. Unlike CNN, cable firms will not be charged for service.

COLUMBIA will use ½ of Intelsat IVA transponder 24 to send television to San Andres Island in the Caribbean, and to Leticia City in the Amazonas. Some testing **now** being done

FREE FREE FREE
FREE FREE FREE

Computer printout for satellite location, if you inquire about our very low prices for earth stations.

SATELCO
Wholesale Export Of Satellite Home Earth Stations
5540 W. Pico Blvd., Los Angeles, CA 90019
Tel. 213/931-6274 •Telex: 9103214013



NATIONAL MICROTECH'S
X9
IN STOCK
ALSO
ENGINEERING CONTRACTORS AND STOCKING DISTRIBUTOR FOR BLONDER TONGUE—JERROLD MATV/CATV PRODUCTS

American Television Systems Inc.
779 East Aurora Road
Macedonia, Ohio 44056
216/468-0000

☆ **POWERJACK!** ☆
Remote Control Actuator Kit
- Fits All $2\frac{1}{4}$ inch Screwjacks
- 115 VAC, .5 Amp Motor
- Single Switch Operation
- Quick, Easy Installation
- All Parts Included Except Wire
- Only $175.00 [Shipping Included]

HOME CABLE, INC.
2123 LEWIS ST.. SALINA, KS. 67401
913-825-7939

YOUR SAT-TV IS OBSOLETE IF YOU DON'T HAVE AN ANTENNA POSITIONER WITH INDICATOR

Now receive all the satellites easily and quickly, changing satellites from your control room. Universal model for adaptation to any polar type mount. Low voltage control with 110 volt motor. Heavy duty—jack screw system with 1860 lbs. force, stabilizes polar antennas. Three indicators now available:

LIGHTS—METER—LCD
$850.00
Dealer Quantity Discounts

QUANTUM ASSOCIATES, INC.
Box 18, Alpine, WY 83128 (307)654-2000

LOWEST LNA PRICE

AVANTEK AND DEXCEL LNA UNITS: TOP QUALITY, LOWEST PRICES, PROMPT DELIVERY!

120° **50dBg, SUPER QUALITY, YOUR CHOICE AVANTEK OR DEXCEL; $585 DEALER NET.**

100° 50 dBg, TOP PICTURE QUALITY, AVANTEK; $845 DEALER NET.

IF YOU ARE A RE-SELLER OF LNA'S, WE HAVE THE "DISTRIBUTOR CONNECTION" FOR YOU. **CALL TODAY!**

HERO COMMUNICATIONS
1783 W. 32nd Place
Hialeah, FL 33012
(305) 887-3203

of service on irregular basis on Global beam. A total of 16 antennas (8 meter size) are being installed for servie with scheduled completion around June 1982. When antennas are completed on ground, Intelsat bird will switch to **hemispheric** service providing 27 dBi signal into large region of Northern South America and Caribbean. Hector Posada of Medellin reports reception of test transmissions, 3.5 to 4 dB above noise on homebrew 8.5 meter antenna.

(REPUBLIC OF) COLOMBIA also currently plans early '84 flight of SATCOL (Satellite Colombiano); a dedica'ed 4 GHz BS bird with two operating transponders, **38 dBw EIRP** at boresight, 4.5 meter receive dishes (160 in all) spread throughout the country. SATCOL has space reserved on US Shuttle for launch of pair of birds.

CNN-2 will be new WESTAR III service offered by Ted Turner, free to cable firms, on January 1st. Turner wants to beat ABC/Westinghouse to operation, says CNN-2 will be mostly hard hitting, action news (few or no features like CNN now has) in 30 mintues repeat/updated segments. Transponder will be 11 (21 on 24 channel receiver). Service will be advertiser supported; CNN radio network also in planning stages, for satellite delivery.

CBS Cable, due on Westar 3 the 12th of this month (TR6; 11 on 24 channel receiver) will have dual audio feeds; 5.8 MHz will be in "stereo" (using normal FM broadcast techniques) while 6.8 MHz will be monoaural.

ESCAPADE, adult service on COMSTAR, has new partner; PLAYBOY Enterprises. New "marriage" will bring substantial new "original adult programming" to channel starting in January.

HUGHES Galaxie 1 satellite, due for 1983 launch, has additional takers; Ted Turner has purchased a pair of transponders, Westinghouse four. TIME, Inc. previously signed up for six.

ANOTHER new service due to start on F1 this month; 19th to be exact. Daytimes, on TR21, "The Preview Channel" will provide members of creative community with opportunity to "show off" pilot films, TV series. Operating hours 11:30 AM to 3 PM.

RCA's Satcom 66 (5th in series) would "like" to be operational by November 1983. FCC must pass on this one as RCA requesting location east of previous "North American window", and satellite would exceed number previously approved for RCA.

PARAMOUNT reports success with Westar program of sending out clips, promos and trailers of yet-to-be-released movies to theaters nationwide. Formal regular service, said to be cheaper than ground or air transportation, will expand and grow.

WESTAR 6 now has FCC approval. New 24 transponder bird expected to launch late 1983; no parking spot yet found. Western Union says "when it is time, there will be a spot...".

RCA had always intended Satcom 5 to be an Alaskan bird; now it is formal. (RCA) Alascom has purchased use of 14 transponders, (same as F2 at 119), for V's location at 143 west. What about the "other" 10 transponders? RCA suggests cable **"could"** get some.

CBN. Remember them? On F1 TR8? Well, take another look. CBN is rapidly becoming a national "secular" TV network, with soaps, variety, news and Saturday morning kid's shows. CBN is into nearly 12,000,000 US cable homes, second only to WTBS. Founder Pat Robertson is drawing his sites on becoming a true national fourth network.

RUSSIAN Molniya newscast, directly off of satellite (apparently) slipped into NBC Burbank news feed from Los Angeles to New York September 10th of F2 TR8. In a special, Jack Perkins reports on artificial hearts, being fed to New York, somebody punched up wrong video source. Not once, but twice. Insert lasted only seconds but veteran Russian TV watchers instantly recognized Moscow announcer. Feed was in full color, no audio. **Apparently** NBC now has a Molniya tracking staiton operational, in or near Burbank!

OUR COVER -

Perhaps you are not aware how "young" this revolution really is. That's a rare collector's item you see; an "invitation", issued by Scientific Atlanta, to attend the first HBO transmission-via-satellite to affiliates (both of them!) just six years ago. Anyone remember what the first program transmission was?

LATE MAGAZINE - Hurricanes Floyd and Gert are responsible for late October CSD; the first late issue in two years of publishing. Sorry about this!

COOP'S BASIC MANUAL - This is the brand new STTI Manual that is devoted entirely to the fundamentals of designing and installing a top performing private satellite terminal. What you **MUST DO** to get peak performance, on every transponder, all of the time. The little things nobody ever tells you about. Stuff you need to know!

NELSON PARABOLIC MANUAL - So you want to build your own dish? Nelson Ethier shows you how, using a very basic technique that combines aluminum and fiberglass materials that you can duplicate in your own garage or backyard. A 10 or 12 foot, high performance antenna is yours if you follow the detailed instructions in this Manual, and spend around $300 to $400 of your own money. What a way to go!

GIBSON SATELLITE NAVIGATION - The first time you try to find a satellite you will wish you had this Manual. Author Steve Gibson boils down the complicated world of navigating your satellite dish through the skies to several easy to understand and follow "basic" steps. And if you want a computer interface to your dish tracking controls, that's here too!

___**YES** - Send me **Coop's Basic Manual.** $30 (US, Canada, Mexico) or $35 (elsewhere) enclosed.

___**YES** - Send me **Nelson's Parabolic Manual.** $30 (US, Canada, Mexico) or $35 (elsewhere) enclosed.

___**YES** - Send me **Gibson's Navigation Manual.** $30 $US, Canada, Mexico) or $35 (elsewhere) enclosed.

NAME _____ Company _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

Send Order with payment to: STTI, P. O. Box G, Arcadia, OK 73007.

COOP'S BASIC MANUAL
PARABOLIC MANUAL
SATELLITE NAVIGATION

COOP'S SATELLITE OPERATIONS - Users tell us this is the most useful Manual they have in their libraries. The whole complete world of who transmits what, where and when, is uncovered for you. From Anchorage (Alaska) radio stations to NBC executive "intercom" lines, it's all here. With instructions for tuning in those many "hidden services" carried by satellite.

COOP'S SATELLITE BUSINESS - Don't go into the satellite terminal sales or installation business without this Manual. Don't even think about it! There are products and services out there in the marketplace you want to avoid, others you want to affiliate with. Coop surveys them all, and tells you what to do (and not to do) in this exciting new business field.

"NEW" HOWARD TERMINAL - Taylor Howard broke the do-it-yourself barrier with his "Howard Terminal Manual" in 1979. Now this updated version has complete circuit board layouts, parts location drawings and everything you need to build his high quality double conversion receiver. "The standard" of an entire industry. Ready for your at-home building efforts.

___**YES** - Send me **Coop's Satellite Operations Manual**. $30 (US, Canada, Mexico) or $35 (elsewhere) enclosed.

___**YES** - Send me **Coop's Satellite Business Manual**. $50 (US, Canada, Mexico) or $55 (elsewhere) enclosed.

___**YES** - Send me **"New" Howard Terminal Manual**. $30 (US, Canada, Mexico) or $35 (elsewhere) enclosed.

NAME _____ Company _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

Send Order with payment to: STTI, P. O. Box G, Arcadia, OK 73007.

SATELLITE OPERATIONS
SATELLITE BUSINESS
'NEW' HOWARD MANUAL

COOP's SATELLITE DIGEST / CSD - A living textbook leading the way for the development of the home/private terminal satellite industry. Sent via first class mail, the first of each month, to provide you with the latest in equipment and operating news promptly and in depth.The ONE WAY to stay on top of the fast moving industry!

___**YES** - Enter my one year subscription to **CSD / Coop's Satellite Digest**. I reside in US, Canada, Mexico, $50 enclosed (US funds).

___**YES** - Enter my one year subscription to **CSD / Coop's Satellite Digest**. I reside **outside of** US, Canada, Mexico, $75 enclosed (US funds).

NAME _____

COMPANY (if any) _____

ADDRESS _____

TOWN/CITY _____ STATE _____ ZIP _____ COUNTRY _____

Send Order with payment to: CSD, P. O. Box G, Arcadia, OK 73007.

12 MONTH
SUBSCRIPTION
SATELLITE DIGEST

REGISTER NOW!

REGISTER NOW!

The way Satellites and Video Applicances will be, and will interface, in the coming "Decade of Video". **Satellite Video Show '81 Anaheim**, November 20-22 in Anaheim, California. Be there. Your life will never be the same!

___**YES** - REGISTER ME for the Satellite Video Show '81 Anaheim November 20-21-22 and send me hotel reservation information and my registration confirmation immediately! $90 (US funds) enclosed.

NAME_____

COMPANY (if any) _____

ADDRESS_____

TOWN/CITY _____STATE _____ZIP_____COUNTRY_____

Send Registration with payment to: SVS '81, P. O. Box G, Arcadia, OK 73007.

LEARN SATELLITES FROM THE GROUND UP!

LEARN SATELLITES FROM THE GROUND UP!

The whole complicated world of at-home / private satellite terminals is **unraveled** for you with the famous STTI "Satellite Study Package". First there is the Bob Cooper "Home Satellite TV Reception Handbook", a comprehensive look at how satellites work and how terminals function. Then there is the STTI "Worldwide Satellite Communications Wallchart", a two-sided four color chart locating all of the primary satellite video transmissions around the world. And best of all, it is written for the layman; to get the "novice" off and running with a good "basic understanding" of the satellite system.

___**YES** - Send me "**Satellite Study Package**" including Handbook and Wallchart. $15 (US, Canada, Mexico) or $20 (elsewhere) enclosed.

NAME _____

COMPANY (if any) _____

ADDRESS _____

TOWN/CITY _____STATE _____ZIP_____COUNTRY_____

Send Order with payment to: STT, P. O. Box 2476, Napa, CA 94558.

SPTS '81 OMAHA - ON TAPE! -

SPTS '81 OMAHA - ON TAPE!

With an introduction by Coop, **each** of the **"Basic Learning Lectures"** from SPTS '81 Omaha (Gibson on antennas, Luly on LNAs, Barker on receivers) on VHS (**sorry - no BETA**) tape. Six hours in all (plays **SLP** format **ONLY**). This is the ONE tape you need in your satellite technical library to make you a well tutored participant in the satellite revolution.

___**YES** - Send me on VHS (SLP speed) one full six hour tape entitled "**SPTS '81 OMAHA**". $100 (US, Canada, Mexico) or $105 (elsewhere) enclosed.

NAME _____

COMPANY (if any) _____

ADDRESS _____

TOWN/CITY _____STATE _____ZIP_____COUNTRY_____

Send Order with payment to: CSD Tapes, P. O. Box G, Arcadia, OK 73007.

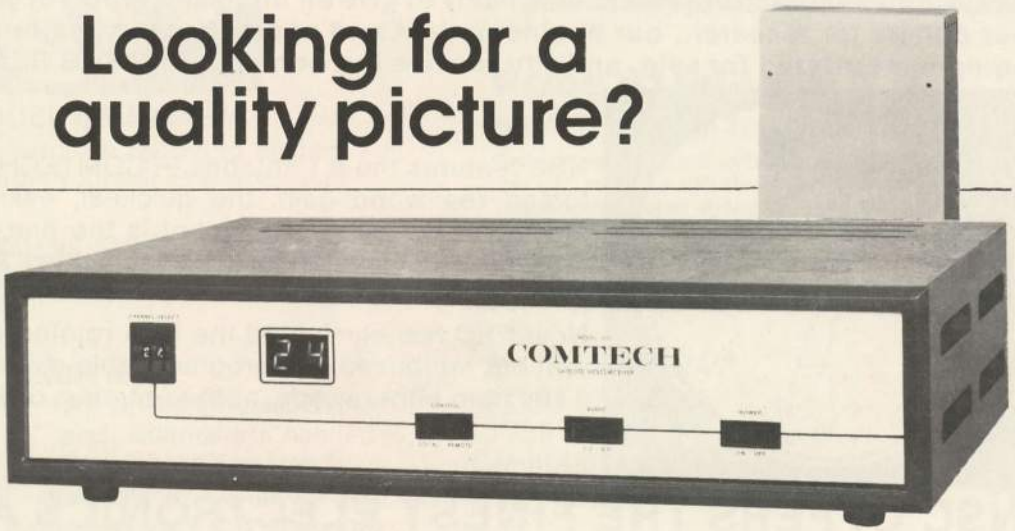
COMTECH

COMTECH
Data Corporation

Wonder what channel you're on?

Tired of constant re-tuning?

Looking for a quality picture?



Model 650 Satellite Video Receiver

The Model 650 control unit is housed in a wood console with the down converter antenna mounted for the most economical installation. The unit has a 24 channel LED display, 6.2/6.8 MHz program demods, DC block, automatic polarization switching and remote control capability.

The Model 650 provides reliability and the highest quality picture available with a full one year warranty. Comtech has more than a decade of experience, and we'll be here in the future to serve you. **Immediate delivery available.**

COMTECH Data Corporation *A SUBSIDIARY OF COMTECH TELECOMMUNICATIONS CORP.*

613 S. Rockford Dr. / Tempe, Ariz. 85281 / Phone 602 968-2433 / TWX 910-950-0085

IF YOU'RE SERIOUS ABOUT QUALITY, NSC HAS THE PRODUCT!

When you manufacture, you're less likely to give an unbiased report of your product. We spend our dollars for research, our engineers test and compare every major piece of Earth Station equipment offered for sale, and you receive the benefit. IT MAKES SENSE.

NSC features the #1 antenna — COMTECH. Comtech offers range tested real-world gain, the quickest, easiest installation in the industry. Comtech polar mount is the finest available: it features adjustable declination for precise tracking. All turning points are on pillow block bearings.

Now NSC has eliminated the LNA rotator for polarization change; and our motorized and programmable mounts may be powered by 110v from either inside, at the antenna, or 24v at the antenna.

NSC OFFERS THE FINEST ELECTRONICS AVAILABLE:

- DEXCEL LNA'S
- DEXCEL RECEIVERS - downverter/LNA
- COMTECH 550 - commercial grade receiver
- COMTECH 650 - commercial grade receiver downverted to 70 MHz at the antenna
- STANDARD - Agile 24 - "The satellite receiver you've been waiting for." The commercial grade that will convert any LNA to a true LNC.

AIRGUIDE HAND SIGHTING COMPASS

The greatest sighting compass on the market. If you're tired of trying to locate a satellite using a regular hand-held compass, try one of these **$34.95**

OCTOBER SALE

Dexcel 120° LNA

$575

NATIONAL SATELLITE Is looking for experienced dealers to install and/or service installations east of the Mississippi plus Texas. If you have installed at least 5 earth stations and are interested, please call.

NATIONAL SATELLITE COMMUNICATIONS CORPORATION
1208 Troy-Schenectady Road; Latham, New York 12110
1-518-783-0088 or 1-800-833-4485

Starview Systems Has Manufacturers Direct Pricing For The Industry

Introduces the MODEL 12K SYSTEM...

A complete home satellite receiving system that you can assemble yourself as a week-end project.

Why spend $7,000 to $10,000? Why pay someone else to install it' Do it yourself in a week-end and save.

50 Channels

KIT CONTAINS

- 12' Antenna
- AZ/EL Mount
- 24-channel tuneable receiver
- 120° LNA
- Feed Horn
- All Miscellaneous Cable and Connectors needed
- Everything You Need
- No Special Tools Needed

DEALER COST $2400.00

U.P.S. Shipable anywhere in USA.

Price $1595.00

NEW!!! Coleman 3742 Receiver!

Scan-tuned, multiple audio sub-carriers, local or remote control, superior threshold performance, full metering, double conversion of course. And available exclusively from Starview Systems.in stock for immediate delivery.

LNA Super Sale - Continues!

120° Avantek LNA	575.00
100° Avantek LNA	975.00
80°/85° LNA	1595.00
ICM 4000 Receivers	995.00
ICM 4400 Receiver	1150.00

New Low Pricing

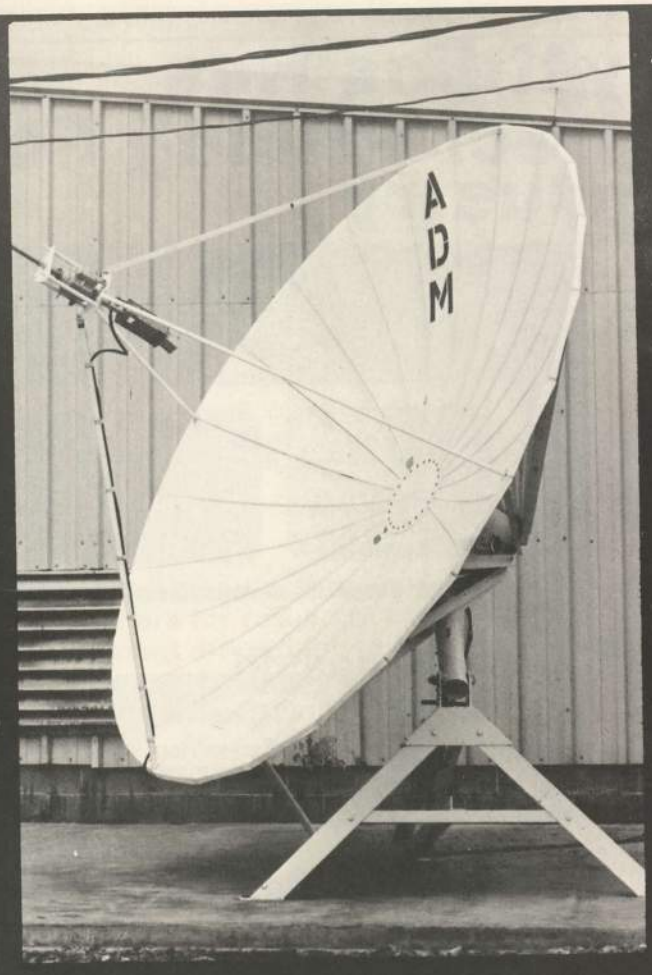
STARVIEW DEALER SPECIAL

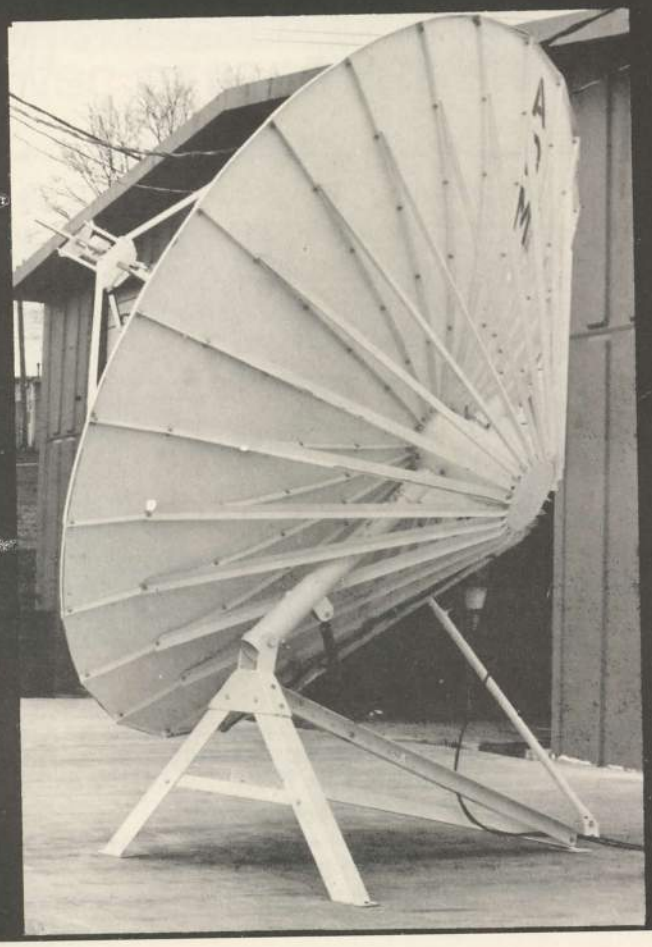
Get in on the ground floor as a TVRO dealer in your area! Starview Systems provides you with everything you need; professional instruction plus the finest mobile sales terminal on the road today. Included is a 10 foot Starview parabolic equipped with rotating feedhorn, Avantek 120 degree K LNA, top of the line Starview 24 channel tuneable receiver, 75' of coaxial and connection cables plus a trailer to get you to the demo site and operational in 30 minutes time. And the price? An unbelieveably low **$4800.00**

STARVIEW SYSTEMS

H & R Communications
Route 3, Box 103G
Pocahontas, Ark. 72466

501/647-2001 • 501/647-2291
1-800-643-0102





ANYWAY YOU LOOK AT IT...

ADM HAS YOUR ANTENNA!

AND YOUR TVRO SYSTEM. Rapid delivery on ADM's super-efficient 11 foot polar mount antenna (includes remote controlled polarization rotation system as well!), plus, packages are available for complete systems including LNA, 24 channel tuneable receiver and cabling. Why wait in a long line when you can get the best, today!

A SUPER TVRO ANTENNA SYSTEM. High quality panelized aluminum 11 foot dish and steel polar mount. Dish weighs approximately 200 pounds, mount 265 pounds. Precision designed, easy installation, zinc chromate base primed and heavy duty white top finish. The rotating feed is standard! Easily shipped and installed. Choice openings for dealers and distributors.

Antenna Development & Manufacturing, Inc.

P.O. Box 1178
Poplar Bluff, Mo. 63901
(1-314-785-5988)

ATTENTION DEALERS:

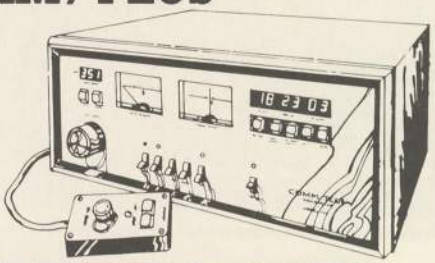
National Satellite Systems is one of the fastest growing distributors of TVRO Systems. Since 1978 we have placed no minimums on orders, no pressure sales, no conflicting dealer territories, we simply offer you excellent TVRO equipment at low prices to compete in the TVRO market. In most cases, delivery is from stock. Our staff at National Satellite Systems has over 82 total years of microwave experience. Also, we can be reached on the weekends for your convenience. We are constantly researching new products for our dealers. Make your dealer application today, it's easy!

National Satellite Systems has over $60,000 of test & alignment equipment for after-the-sale service.

FEATURES:

1. Dual Conversion
2. Bult-in video descrambler!
3. LNA power supplied (24 VDC)
4. 24 Channel digital switch with fine tune
5. 6.2-6.8 audio switch
6. AFC control for no drift operation
7. Signal strength and carrier null meters

COMM / PLUS



RETAIL PRICE $1995

8. Dual polarity driver board optional
9. Attractive wood cabinet
10. Down converter at the antenna is optional.
11. Remote control for tuner (20' of cable)
12. Low prices for our dealers

NATIONAL SATELLITE SYSTEMS is proud to be the stocking distributor for the following lines of equipment:

ANTENNAS - 2', 4', 6', 8', 10', 12', 13', 15', and 20' diameters.
ADM - KLM - Mid America - Miralite - Prodelin - Vidiark - Wilson

RECEIVERS - 4 and 12 Ghz
Automation techniques - Comm-plus -Comtech - Vitalink - KLM
National Satellite Systems - Microdyne - Scientific Atlanta

LNA's - 4 and 12 Ghz
Amplica - Avantek - MA/Canada

RF MODULATORS - Sony - Uhf Associates - National Satellite Systems

LPTV TRANSMITTERS - Television Technology (complete systems from $2400.00!)

GUNN PLEXERS - Point to point microwave systems over distances of 20 miles.

MOTORIZED ANTENNA DRIVER - Quantum - National Satellite Systems

Plus, miscellaneous little items in stock that are absolutely necessary to make every system complete, including ferrite isolators, coaxial switches, relays, "N" connectors & adapters, dual feed systems, scaler feed horns, etc.

Used equipment also available for greater savings.

NATIONAL SATELLITE SYSTEMS

Division of

SOUTHWESTERN SATELLITE SYSTEMS

4800 Pan American Freeway N. E.
Albuquerque, NM 87107
Phone (505)883-3626 Monday thru Saturday

Call Toll Free
800-545-6416

Call Toll Free
800-545-6416

THE WASHBURN™ TVRO RECEIVER

EXCEPTIONAL PERFORMANCE

- **TRUE EXTENDED THRESHOLD** - 7 dB under full video modulation conditions, achieved through meticulous attention to removing limitations imposed by components.
- **HIGH FIDELITY VIDEO** - Full 30 MHz I.F. bandwidth and 8.4 MHz video bandwidth prior to final subcarrier filtering, coupled with heavy negative feedback in all high level video stages for very low differential distortion and controlled transient response.
- **HIGH PERFORMANCE AFC** - Eliminates the need for fine tuning and provides additional dispersion rejection for full use of the I.F. filter bandwidth and superb interlace.
- **FULL REMOTE CONTROL** - 25 ft. (extendable) remote allows an untrained user to easily select transponders and control the volume of the High Fidelity Audio Output. Normal transponder selection automatically commands correct feed polarization through a closed-loop servo.
- **SELECTABLE SUBCARRIER PRIORITY** - With visible subcarrier indicators and two easily changed plug-in detectors (5.5 to 8.4 MHz available, U.S. or CCIR format). Usually eliminates the need to manually select subcarriers, while allowing manual control when desired.
- **FULL FUNCTION METERING** - With selectable manual tuning and AFC disable allows checks of system CNR without additional equipment. Continuous monitoring of Signal Strength (in linear dB) and tuning error (in MHz).
- **VCR COMPATIBLE** - Video and audio levels allow use of your VCR as a modulator, providing immediate recording without cable changes when desired.
- **DESIGNED FOR RELIABILITY** - Careful cost / performance balance to insure continued quality reception.

SUPERIOR VALUE

- **LOWEST IN-PLACE SYSTEM COST** - "Bargain" receivers stop being a bargain when you add up the antenna and LNA costs for sparklie-free reception with higher thresholds.
- **USER ACCEPTANCE** - Compact, pleasant packaging, easy operation, and high performance with small antennas suit it to homes and neighborhoods where "experimenter's" equipment would be unacceptable.
- **VERSATILE** - Easily reconfigured for shared use of a single ortho antenna by multiple receivers and homes.
- **SIMPLIFIED INSTALLATION** - Separate Demodulator Console, Downconverter, and Rotor Control Assemblies eliminate routing (costly) hardline through finished rooms and allow easy relocation of the control point.

EARTH TERMINALS

Cincinnati Office
255 Northland Blvd.
Cincinnati, Ohio, 45246
513 - 772 - 6900

NOW. . .A SatFinder Antenna System For Less Than $3,000.00

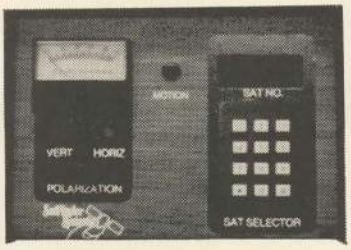
SatFinder. . .the people who pioneered the first quality rotatable receiving satellite system. . .the system that rotates through all satellites, not just 20 channels. . .the system that eliminated gear and switch adjustment and the use of bulky motors and heavy wires. . .

SS-3 HAND ROTATABLE ANTENNA PACKAGE NOW ONLY $2895.00 WITH SATFINDER ELECTRONIC ROTATION PACKAGE $3995.00

COMPARE OUR 10' DISH TO ANY 13' DISH

SATFINDER. . .THE SYSTEM THAT PUT THE STARS AT YOUR FINGERTIPS WITH JUST THE TOUCH OF A BUTTON BRINGS YOU AN ANTENNA SYSTEM FOR UNDER $3,000.00

Our new 23,000 square feet manufacturing facility enables us to give you the SatFinder quality you have seen and read about at this incredible new price. Now you too can afford the system that has been called "the Cadillac of the industry".



SatFinder command control allows you to instantly select any satellite you choose with just a touch and is easily programmed for future satellites.

AVAILABLE IN:
3 Meter 5 Piece
3 Meter Solid
Custom Colors (Standard color—Sandy Beige)

MONEY BACK GUARANTEE
You must be completely satisfied with the performance and ease of installation or your money back.

SatFinder Systems

5146 S. 94 E. Ave. Tulsa, OK 74145
918/664-4466

THE PROOF IS IN THE PICTURE

NO FANCY SALES PITCH
JUST DOWN TO EARTH QUALITY

[SPECIFICATIONS]

Diameter - 12 Ft./(3.6 Meter)

Construction - Aluminum (24 Section)

Gage - .060 and 3/4 Hard

Gain - 41 DB Nominal

F/D - .375

Antenna Weight / Mount - 525 Lbs.

Shipping Weight - 595 Lbs.

[ANTENNA-INCLUDES]

- Steel Polar-Mount / True Offset
- Rotor and LNA Mount
- Rotor
- Feed Horn (Scaler)
- White Finish
- Triangle Base

COMING SOON: A 3 Meter model with outstanding (top) performance for those who desire a smaller antenna, at a price that will be pleasing to the pocket-book.

With 80,000 square feet of production area, we're on our way of becoming the largest supplier of TVRO Antennas to the industry. We are achieving this goal by being innovative in our designs, maintaining quality control in our manufacturing and offering competitive pricing.

DEALER

SINGLE LOT — $1395.00 **F.O.B. Hastings, Nebr.**

(Call For Quantity Pricing)

0011 **3.6 Meters**

HASTINGS ANTENNA CO.-INC.

TELEPHONE (402) 463-3598

847 W. 1ST HASTINGS, NEBR. 68901

TELEPHONE (402) 463-3598

Wilson Microwave Systems

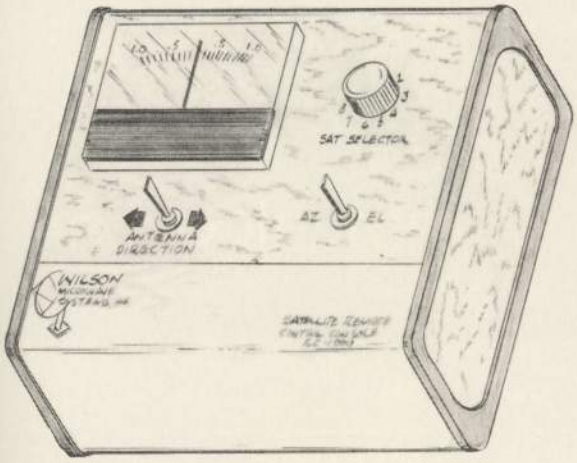
Wilson Microwave Systems uses the latest state of the art method of manufacturing the parabolic designed antenna. Resistance to distortion and instability is increased with the addition of a full screen mesh sealed within the ¼" thick fiberglass.

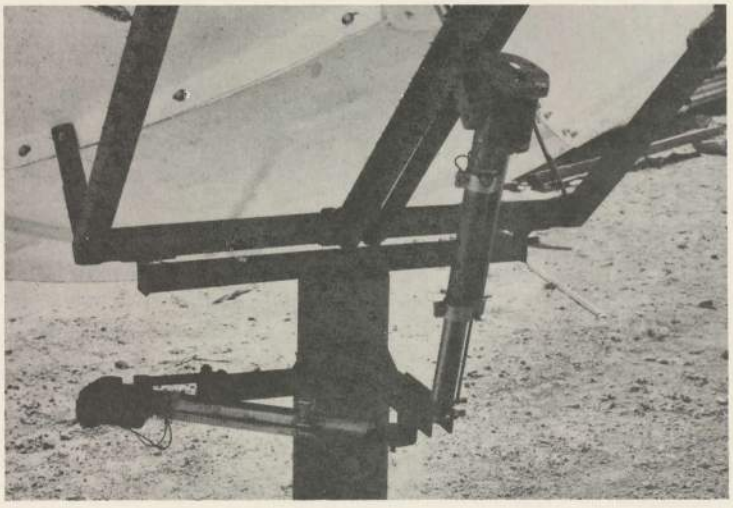
Wilsons unique "Vari-Mount" provides the easiest installation and mounting method available today. The 4pc construction of the dish provides easier handling, less installation time, and greatly reduced shipping costs.

With the exclusive 4 point Williams' mount, you are assured a quicker installation and that the antenna will be more securely fastened to the Vari-Mount. The antenna struts aid in stabilizing the fiberglass for operational reception in winds of up to 50 - 60 MPH.

A ball bearing race allows easy turning of the antenna in changing to the different satellites. A scale is included on the base to assist in their location.

For those areas that require a larger dish than the 3.35 meter, Wilson offers an addition that will increase the size to 4.0 meter. It is easily bolted to the outer edge and maintains the strength, while increasing the performance.





The optional remote control feature allows you to control movement of the azimuth and elevation positions of the antenna from the comfort of your easy chair – without having to go outside. This feature may be added later.

Wilson can now supply you with a complete system for turnkey operation that includes everything that is required for installation. The package includes the fiberglass 11' antenna featured above, receiver, 120° LNA, modulator, and all cables required. Many options are available.

DISTRIBUTOR & DEALERSHIPS AVAILABLE

WILSON MICROWAVE SYSTEMS,INC.

4286 South Polaris Avenue - Las Vegas, Nevada 89103

A NAME KNOWN TO THE COMMUNICATIONS INDUSTRY FOR OVER 12 YEARS

FOR INFORMATION Call (800) 634-6898 or (702) 739-7401

For their Satellite Feeds Broadcasters Demand Hero Communications Super 'Tenna Quality.

The pioneers of the consumer Earth terminal market now offers a complete line of SUPER-TENNA SYSTEMS and Accessories

- 12 ft., 16 ft., and 20 ft. SUPER-TENNA SYSTEMS
- Lightweight, all-aluminum antenna
- Micro-Grid surface for less wind load
- Fully motorized 'horizon to horizon' polar mount
- Custom designed systems for home and commercial applications
- No heavy machinery required for installation

Why take a chance on an unproven product?

Select the 'Field Proven' choice of the professionals.

For more information and the dealer nearest you, contact the 'professionals' at HERO COMMUNICATIONS OF FLORIDA.

DEALER INQUIRES INVITED

HC HERO COMMUNICATIONS

A division of Behar Enterprises, Inc.

1783 W. 32nd Place • Hialeah, Florida 33012 • Phone: (305) 887-3203

Satellite Television Systems For The 80's

SATCOM USA LTD — PALENVILLE, NEW YORK

SATCOM CANADA — DIVISION DE 104157 CANADA INC.

Exclusive Agents* For:

TEKNIMAT STATE-OF-THE-ART RECEIVERS

COMMPLUS COMMUNICATIONS, INC. INNOVATIVE MESH & SOLID REFLECTOR ANTENNAS

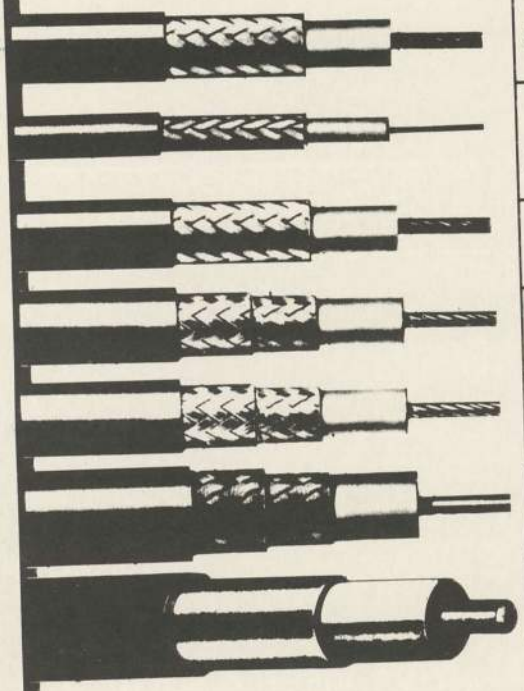
* Now Two Locations to Serve You:

SATCOM
USA LTD
STAR ROUTE 248A, PALENVILLE, NEW YORK, 12463

SATCOM
CANADA
1140 CLAIRE CR., MONTREAL, QUE. H8S 1A1 (514) 634-7177

BUY FACTORY DIRECT AND SAVE

Coaxial Cable For Quality Satellite TVRO Installations



	Nominal Loss Per 100 @ 3 GHz	@ 5 GHz	Unit Price 5,000 min.	10,000 min.
RG 8A/U	19.0 DB	28.0 DB	.275/ft.	.264/ft.
RG 59/U	(50 MHz) 2.30 DB	(100 MHz) 3.30 DB	.075/ft.	.069/ft.
RG 213/U	19.0 DB	28.0 DB	.285/ft.	.271/ft.
RG 214/U-S	19.0 BD	28.0 DB	1.45/ft.	1.37/ft.
RG 214/U-T	19.0 DB	28.0 DB	.66/ft.	.59/ft.
RG 217/U	13.0 DB	19.0 DB	.64/ft.	.60/ft.
RG 331/U	6.5 DB	9.00 DB	.50/ft.*	.41/ft.

*WE MANUFACTURE "N" CONNECTORS FOR ½" HARD LINE

Whether your TVRO system uses an antenna or remote mounted receiver; Crescomm manufactures the right RF cable for you. All of our wire and cables are manufactured to strict military specifications with the majority of our products being used in the Aero-space Industry. At Crescomm's Fairfield facility, a broad range of wire and cables are manufactured-including control cable, hook-up and lead wire, audio and communication cable, "teflon" wire and tubing, coaxial cable, molded line cords, and MIL Spec. UL and CSA approved wire.

MAKE CRESCOMM YOUR ONE STOP SOURCE FOR ALL YOUR WIRE AND CABLE NEEDS.

Crescomm Incorporated

WIRE DIVISION • COMMUNICATION DIVISION • ELECTRONIC DIVISION

10 B WASHINGTON AVE. FAIRFIELD, N.J. 07006 (201) 575-4184

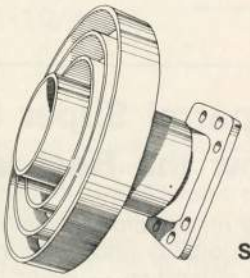
CHAPARRAL.....

New Products for Expanded Flexibility

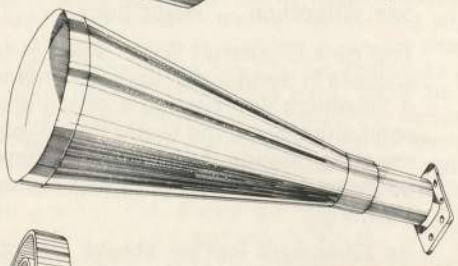
We put a lot of thoughtful engineering and tough field testing into the Chaparral **Super Feed.** The result is an instrument that increases antenna gain by as much as 1.5 dB.

We put the same imaginative design and hard-nosed testing into the Chaparral **Super Spherical,** a new feed that squeezes more performance from spherical antennas than any other feed on the market.

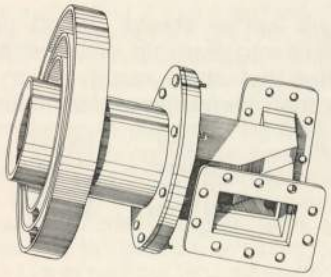
The Chaparral **Dual Feed** is our newest product. Adaptable to parabolic and spherical antennas, Dual Feed is the most efficient choice for suppliers who want clear reception from both polarities with a single unit. Building on the proven performance of Chaparral's Super Feed, the Dual Feed delivers better than 1.2:1 VSWR and isolation of at least 30 dB.



Super Feed



Super Spherical

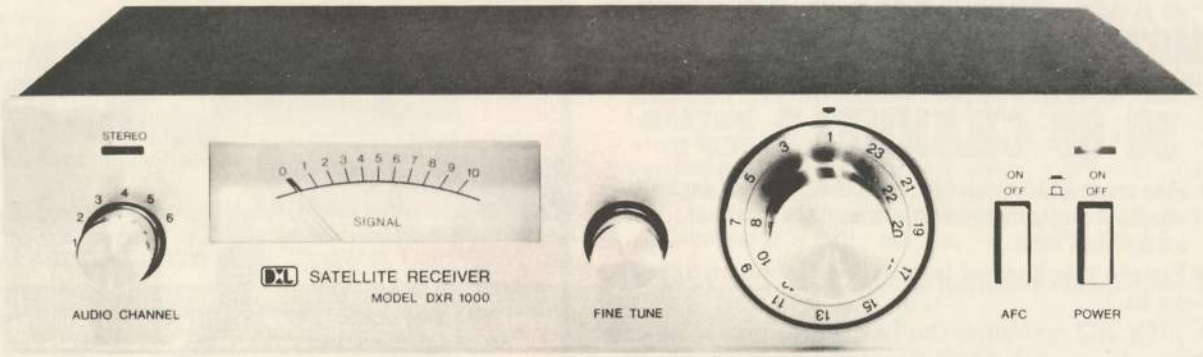


Dual Feed

CHAPARRAL COMMUNICATIONS

P.O. Box 832, Los Altos, CA 94022 415-941-1555

SkySearch



DEXCEL DXR 1000 Satellite Receiver

SkySearch is pleased to announce the purchase of a large quantity of **DEXCEL'S** new **STATE OF THE ART DXR 1000 RECEIVER** with remote **LNA/DOWNCONVERTER** module. We are going to pass these savings on to the customer. We also distribute **COMTECH** products. Call us for the lowest prices.

SkySearch Inc. — P.O. Box 978, Hwy. 501 · Conway, S.C. 29526 · 803/347-4966

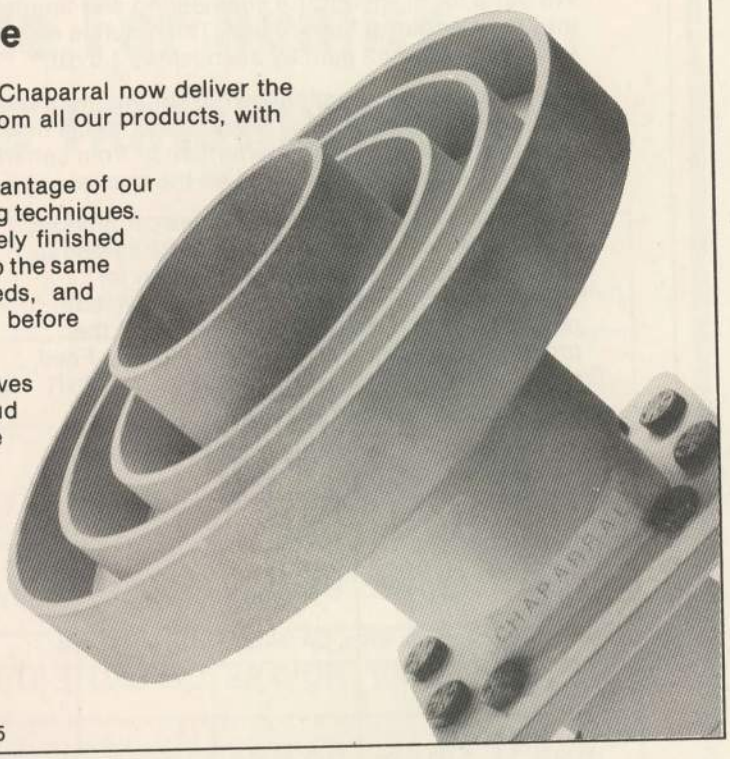
Chaparral Super Feed II...
Now the Best is Inexpensive

New manufacturing methods engineered by Chaparral now deliver the same quality and performance you expect from all our products, with one difference — lower price.

The new Chaparral Super Feed II takes advantage of our success in developing less costly manufacturing techniques. A 20-ounce unit cast as a single piece in finely finished solid aluminium, the Super Feed II performs to the same exacting standards as other Chaparral feeds, and undergoes the same rigorous inspection before shipping.

At Chaparral, we've always prided ourselves on design and workmanship. Now we're proud we can offer that same quality at a price that makes high performance economical.

Super Feed II	1 unit	$60.00
	5 units	$50.00
	10 units	$43.00
	100 units	$35.00



CHAPARRAL COMMUNICATIONS

P.O. Box 832, Los Altos, CA 94022 415-941-1555

Throw away that jack handle and get THE KIT

THE RETRO FIT KIT
MOTORIZED ANTENNA ACTUATOR

THE FINGERTIP CONVENIENCE OF
50-60 CHANNELS INSTEAD OF 20

- Fits most 2¼" (outside tube dia.) screw jacks w/½" shaft. Adapters available for other units at additional cost.
- Simple mechanical installation (1 person approx. ½ hr.)
- 115V AC operation (no batteries)
- Simple motor control instructions included
- Standard kit drives most 10-13 ft. dishes. (heavy duty units optional)
- Screw jacks now in stock

THE RETRO FIT KIT

ONLY $236.00
Includes motor, couplings, mounting brackets, and instructions. Quantity discounts available.

AVAILABLE SOON: THE AFFORDABLE DIGITAL LOCATOR
DEALER INQUIRIES WELCOME

CALL OR WRITE: SPACEAGE ELECTRONICS
P.O. BOX 15730, New Orleans, LA 70175 (504) 891-7210

SPACEAGE ELECTRONICS

COOP'S COMMENT ON PROGRAMMING

NETWORK JUNKIES

When the Coopers settled in the Turks and Caicos Islands, just over one year ago, and it became clear that we were going to be the creators of a new, first-time national television service, I did a fair amount of thinking about what type of programming I would pump through our network. I decided early on, having seen what a tremendous hold US networks have on television viewing "habits", that we would not make the same mistake. I artfully arranged our daily schedule so that every evening at 8 PM we have a movie. From someplace. A fair amount are off of tape, even today. "Facts of Life", "Trapper John" and that ilk do not end up on WIV-TV.

Now over in Grand Turk, our capital island and one where we will not be operating until mid-fall at the earliest, there is a two year old five watt VHF station that is fed programs from the states. A group in Tampa videotapes all of the local TV fare and sends it down to Grand Turk weekly on 1/2 inch. The Grand Turk TV "station" operator, using equipment left behind by a US Navy group that used to house a base there, cranks out around 8 hours a day worth for $15 a month. The stateside programs are mostly network stuff, although they do include last week's newscasts from the local Tampa station. **People on Grand Turk** know what "Dallas" is. They also know **we** don't carry it here, and I've had to explain as tactfully as I can why we will not carry network programs down here (news and sports, live via satellite being the obvious exception).

Nobody, yet, has a **choice** between the two approaches to programming. It will be a couple of months before we have a "head to head" competitive situation. I am looking forward to it. I think a skillfully selected "indie" can run circles around a network. Very few would agree with me, so we have a test tube about to hatch down here in the outback of the Caribbean.

Now one of the very minor projects Kevin and I have been sifting to the back burner, for some months, is an MATV system for our Annex and house. I scouted up reasonably good quality modulators for channels 2, 4, 6, 7, 9, 11 and 13 and proceeded, with Kevin's help, to wire up a 20 outlet MATV system in the two buildings. Since we have no fewer than six satellite receivers running fulltime, it seemed a shame not to "loop" their signals outside of the TV network control room and into MATV outlets here where we live and work. Just because the **rest** of the country has a **single channel** of television is no reason **we** have to be limited to a single offering. Kevin talked me into this early, when he and his sister would frequently disagree with my 8 PM movie choice, and go off to a corner of the annex with their own VCR to watch some movie out of our extensive tape library rather than watch what the rest of the country was watching.

After we got the Bob Behar six meter Hero motorized antenna opeating in late July, Kevin found the AFSN stuff on vertical transponder 9, RCA's F2. That's the American Forces Satellite Network which beams US programs to Guantanamo Bay (Cuba), Roosevelt Roads (Puerto Rico), a US base in Panama and several bases in Alaska's outback. They offer around 18 hours per day of US CBS, NBC, and ABC stuff for our far flung service people. I was up to my neck working on copy for the new Coop's Basic Manual when he burst into the room to announce that he was going to watch "Different Strokes", "Charlie's Angels" and a long list of other US network pap the **next** day. What he found was that if you allow for the five or six hour time difference, AFSN was sending US network stuff out daily. With the VCR in his room he simply set it to start recording the AFSN feed, through the house MATV system, at **1 AM local time**; when it was 7 or 8 PM in Alaska. Then the next morning he got up and reviewed what he "caught" while he slept.

Now, most evenings, while the rest of **our country** is watching the 8 PM movie I have selected for them, my family is curled up watching a tape of the previous nights AFSN feed. And loving every minute of "Dallas", or whatever. I have sworn each of them to secrecy; they have promised to keep it to themselves that we have this stuff available!

Naturally I can rationalize that my own family, after more than a decade of being exposed to US network programs, is hooked for life. That there is no saving them from themselves. But what about the residents of Grand Turk? What will happen when we get the last of the six WIV-TV transmitters installed, there, and they have a choice between my fantastic programming live via satellite, and last weeks or the week before's US stuff on videotape?

As strange as it sounds, I hate to see people "get hooked on television". I figure you can miss a movie or a specal, and not feel withdrawal symptoms for life. We all know what happens when a "Dallas" fan misses an episode of **their** favorite evening soap. I deliberately created a program schedule here that people could take, or leave alone, and not feel abdicted to, or a slave to. Maybe I am morally right, but way off base as a marketeer. We'll see this fall.

CSD PROGRAMMING

COOP'S SATELLITE DIGEST (Programming Section) is published monthly by West Indies Video, Ltd. a Turks & Caicos Corporation with business offices located at Grace Bay, Providenciales, Turks & Caicos, BWI. Mail to CSD, advertising inquiries and subscriptions should be addressed to CSD, P. O. Box G, Arcadia, OK 73007; a mail forwarding point. CSD maintains no office in the United States of America although assistance relative to CSD advertising and subscriptions is available through the offices of Satellite Television Technology at (405)396-2574. STT has no legal affiliation with West Indies Video, Ltd. Subscription rates to CSD are $50 per year in the US, Canada and Mexico; $75 elsewhere. Entire contents Copyright 1981 by West Indies Video, Ltd.; Robert B., Susan T., Kevin P., and Tasha A. Cooper.

SIX METER HERO IS NO TOY

SUPER 'TENNA?

I am going to preface this report in an unorthodox way. Bob Behar is my friend. Mi amigo. I want you to know this up front since I am writing about how well his six meter "Super Tenna" works for us down here in the outback of the Turks and Caicos. And I hope, sincerely, that Bob is still "mi amigo" after this report appears in print.

The Super Tenna is a mesh grid surface antenna available on the marketplace in 12, 16 and 20 foot apertures. Bob Behar operates Hero Communications out of Hialeah, Florida; a largely Spanish (Cuban) speaking suburb just east of Miami proper. Bob and Estrella and Ricky and Raina (the family) function largely in a Spanish speaking environment. The Coopers speak precious little Spanish (although we are learning), but our Kevin and Tasha would rather spend time with Ricky and Raina than anyone else they know. Those who saw our crew in Omaha probably recall the tireless threesome and foursome.

The Super Tenna came out of Bob Behar's decision, way back in 1978, to become part of the home terminal industry. There was no industry then; Bob's back yard antenna (a ten foot dish from Anixter Mark started it all) was perhaps one of the first 25 or so in the country, in a backyard. Bob's background is television engineering. His office includes awards for creative videotape editing, featuring commendation from CBS for creating a unique (and now standard) tool that allowed (at the time) innovative playback of professional football action on the Sunday pro telecasts you see on CBS. Bob is no slouch.

Bob Behar has a natural ability to get people's attention. Many of his "tricks" are legendary in the industry. He was the first, to our knowledge, to "exploit" public (no charge) display of major closed circuit fights. He simply set up some big screen units in front of his Hialeah store front and announced anyone who wanted to watch the fight could stop by. One of these "tricks" created a crowd of more than 4,000 people. Another one created such a crowd that the Hialeah police moved in and shut it down; anyone who couldn't fit indoors was told to "move on". Several thousand mad fight fans were turned away from that one. Bob learned something about getting "crowd/meeting permits" on that one. Bob also made lots of publicity mileage out of receiving the 1980 summer Russian Olympics from Ghorizont. He made every US network newscast, front pages of newspapers coast to coast and appeard on BBC-TV and other far away places over that one. One day the Brasilian national television service wanted to visit his facility; to do a story on his Russian reception. When the producer arrived Bob casually dialed up the Intelsat feed of Brasilian national TV and the astounded producer fell all over himself watching Brasilian TV in the US. Needless to say the producer changed his whole "story approach" over that one. Watching his own interview, coming back off of Intelsat's Brasilian feed, was one of Bob's prouder moments.

What does any of this have to do with the Super 'Tenna? Well, it tells you something about the man; this Bob Behar. He is a gambler. A man who says "**Hey - let's try it and see if it works**". Anyone who has seen him work, at shows or elsewhere, knows that he is quick on his feet, has a brilliant mind, and is probably several steps ahead of you at any given moment. I think that, combined with his Cuban background, makes many people who set out to deal with Hero nervous. I hate to say it, but some people simply do not appreciate the industrious nature of a hard working Cuban electronics whiz. I think the bad press that Cuban refugees have gotten on national TV may have something to do with that. That's too bad for those who have those kind of built-in biases; they are missing knowing, and appreciating, one of the really innovative minds in our industry today.

Having said that, I'd like to tell you about my Hero Super 'Tenna. It is a six meter unit. And it is motorized. It is also a proto-type unit. I think it may have been the second one ever built but I am not sure of that. The first one sits in front of Hero's place of business in Hialeah, cranking out fine looking pictures.

"**I think** you **should have a six meter motorized antenna**" Bob mentioned one day. We agreed. "**I have an advanced proto-type in the warehouse, one I won't sell because it is not as pretty as the production models, and we can probably make a good arrangement on it**". I needed a "good arrangement" if I was going to air freight it down to the Turks and Caicos and wrestle it together.

Our orbit belt down here is filled with birds. It may be hard to believe for you who live in Iowa, but the footprint (signal level) down here from Russian's Ghorizont is stronger than the footprint from F1. We even have the SECAM color monitor in house so we don't have to watch European TV in black and white. Our sky is filled with birds, from horizon to horizon. Anyone, down here, who doesn't have a way to track through the orbit belt looking for or at "pictures" is really missing plenty of the real action. We wanted to do this, but we also wanted to have as high quality pictures as we could manage. We had looked at the AFC 7 meter antenna, and a proto-type tracking unit they have available. And at the new S-A motorized seven meter, which would have set us back a paltry $35,000 plus freight. But the S-A unit can only cover around 100 degrees of the orbit belt and if we were going to go "that far" (as to motorize a big dish) we wanted to see from "edge to edge".

Getting stuff down here is a pain. You can ship by boat, fairly cheaply, but in the process you run the real risk that what you ship will end up broken or bent. We have a six meter Paraframe sitting out in the yard that came down by boat. We may never get it running, after they dropped half of it 60 feet to the ground with a crane. The Hero six meter ships to funny places like Provo on an airplane. Well, a DC-6 anyhow. Our "advanced prototype" arrived here in bundles. With no instructions. We don't fault Robert for that; we had taken dozens of photos of the unit in front of his shop and by carefully studying the photos in our files we **should** have been capable of making all of the pieces fit.

It didn't take us too long to figure out we were going to have to do some frame strengthening to make the mount strong enough. The Super 'Tenna is chain driven by a ¼ horsepower electric motor. The chain and the motor are far overrated; you could probably move a small destroyer with them. The support structure, on our proto-type, was not as well designed, however, so we spent a couple of days rounding up a portable welding rig, getting it moved to our site, and cutting and welding into place a couple of extra supports.

In Omaha, at the recent SPTS, we watched a trained Hero crew spend perhaps 6 **hours** getting the five meter they displayed there assembled and on the mount. It took us a little longer since none of us had ever done it before. It took us just over six **days**, to be exact. Part of this was due to our lacking

prior experience, part because we had to build a "crane" to lift the various sub-assemblies into place using 4 x 4 posts and hand "come-alongs". In all honesty, putting together our particular six meter proto-type was not one of the enjoyable periods of my life. We made several (in retrospect) dumb mistakes as we went along that, when caught, required us to back track and do some steps over again. Our caution here is that even if you have assembled many antennas before (we have), each antenna has its own unique method of assembly. This is especially true with an "erector set" approach such as employed by Hero. The real caution is that you must build the surface so that when you get done you have a parabolic shape. Hero provides a "template" so that you can check it as you go along. The template mounts to the center of the dish and rotates around the full inner surface area as you go along. Each of the struts on the 20 footer has three separate pivoting joints, which **must** individually be adjusted for the parabolic curve for that particular strut. On a 20 foot dish, this is not overkill (although we thought it might be at first). Adjusting the dish "to curve" proved to be one of the less complicated and time consuming parts of the assembly. Seeing each strut "proof in" was, in fact, a pleasant exercise since even though the surface was not on at this point we knew we were "home free" as each did in fact proof.

Now it would probably be nice not to have to be concerned about getting each strut (there are 24 in all) "proofed". But, when you are dealing with a big surface area (a 20 foot has four times the surface area of a 10 footer), the alternate to putting it together on site is to buy an antenna in pre "cast" sections and then fight the battle of transporting large, heavy pieces. With the sectional or piece-by-piece approach, you still have a surface to put on after assembly of the super structure.

The surface on all Hero antenna is a mesh. It is calculated that the metallic surface remaining is 58% of what you would have with a solid surface. Is there a penalty with a mesh surface dish? The answer is mixed. Two factors are working against you with any non pre-cast surface:

1)The final accuracy of the **sections** of the surface;

2)The final accuracy of the **full** surface.

The two are not necessarily synonymous. It is possible to have good **section accuracy** but poor full dish accuracy. Section dishes suffer this trait. An erector set antenna can suffer from both problems but one of the advantages of an erector set approach is that with a good template you can usually bring the surface into "proof".

The "surface" you are proofing, however, can be the struts that support the actual surface and not the actual surface itself (the mesh). This presents a new challenge to proofing since once you have proofed the struts (**without a surface**) you then go to work to put the surface into place. We elected to proof the struts first, and then as we laid in the pre-cut mesh pieces re-proof each section as the mesh wedges were laid in place and fastened down. In the real world, surfacing a 20 foot aperture with mesh is a heck of a chore. Hero's people make it look fairly easy at shows; I can tell you that when you have never done it before, and the wind is blowing, and your helpers are working up to 20 feet or so above ground hanging like circus performers from the strut super structure, it turns into a slow and difficult task. Although our prototype had been previously erected (and dis-assembled), and therefore had pre-drilled holes for the metal screws that hold the surface wedges in place, the wedges we received were not numbered. There being 24 such wedges, the chances of locating the right wedge for the right (i.e. former) location was thin indeed. We spent an hour trying to match them up with the holes and then decided we would "simply" re-drill as we went along. I don't think that was a bad decision, even now, but it added an extra day - plus to the construction time.

The Hero mesh is stout stuff; a 200 pound man can walk on it when suspended between a pair of struts. You are not advised to do so however since you will probably indent it so that that section will never again take proper form. But with 24 sections, each of which is essentially "flat" from strut to strut, you are not really building a true parabolic; you are building a 24 section series of pie shaped wedges which end up being "more or less" parabolic in **combined** shape. This is one fo the dis-advantages to **any** sectionalized dish that uses materials which do not have a built-in parabolic curve in each wedge section. The "sum" of the full surface is close to a parabola, but the individual pieces are simply flat pieces. You give away some gain when you do it this way.

Given that we spent too long putting it together (because we had no literature to help us, were working without proper tools and it was hot as you know what), the antenna went together with no serious problems. Valentine Pratt did or

SURFACING - we did a really dumb thing with the surfacing; we started putting it on before we ran the outside strut-end pieces around the perimeter of the dish. So we had to back track, and add them to the dish after the surfacing was begun. They made a big difference in holding the integrity of the curve to the template as we surfaced the dish!

oversaw most of the effort. Each day his optimism was new. "**We'll get it, Bob**" he kept saying. We did.

We elected to erect the antenna with the "nose down". This is something I understand the present buyers of the 20 foot will not have to contend with, since the whole mounting system has been changed. Our mount, with antenna attached, looks a little bit like a surealistic giant Praying Mantis perched and ready to pounce. The present mount is a single post affair and that, frankly, will cut way down on construction time. With the nose "down", we put the whole strut and surface together. Then using a hand built "crane" we jacked and lifted and tugged and pulled until we had the nose "up" and the antenna

more or less into its proper elevation position. We built the concrete foundation for the dish up above the ground level, and placed it on a 12 foot by 12 foot concrete pad. The pad is overkill; we had two reasons for doing it this way:

1) We don't want the antenna to blow away in a hurricane (something we have yet to test); and,
2) We were trying to cover up a previous disaster. The disaster was a 12 foot Vidiark Spherical which was run down last Fall by a slightly crazed D8 cat driver who lost his way while plowing our driveway, and ended up backing into (and crushing) the Vidiark shortly after it was completed. After removing the remains of the Vidiark we elected to build a large pad over the pillars we had poured for the Vidiark's support.

With two other antennas already in and operating (AFC 5 meter and SatFinder 3 meter) we figured we had a good fix on "north". The Hero is a polar mount, and you align the rotating axis of the huge support assembly with true north and south. After the nose was "up" we trotted out our ICM 4200 antenna alignment receiver, and a monitor, and went to work. The antenna was parked, manually, almost as far east as it could go. We had not attached the motor and chain drive at that point and while that was being done I inter-connected the electronics and turned on the receiver. No harm in spinning through the dial I thought.

There, on transponder position 9 was a bunch of guys playing basketbal. And a pretty decent picture at that. Humm. Now the antenna was pointed in no place in particular. Just "east". The transponder 9 plus eastern heading plus 7.5 MHz audio sub-carrier was a dead give away. We had by dumb luck, turned the system on with the antenna fixed on Ghorizont 2. The transmission was a US versus Russia summer basketball tournament from Moscow. Things were looking up!

That was the last **television we saw for nearly 24 hours.** I reasoned (incorrectly, it turned out) that we had hit (precisely) the north-south alignment with the mount. The mount was temporarily secured to the huge pad with a pair of 3/8" lag bolts. We had one at the nose, around which we could do some pivoting, and another at the rear to anchor the beast down. After finding the Russian signal so quickly we proceede to bring the dish on to the west with the motor driven chain drive. As we ran through the North American domestic belt we saw zilch. Nothing at all. Back to Ghorizont, and, it **was** still there. So was (on close inspection) a sign of Intelsat at 24.5 degrees west location. Once again I made a faulty judgement call. "**If the dish was close to being on for Ghorizont at 14 west, and it still was close to being on for Intelsat at 24.5 degrees west, it should be fairly close to being on for the opposite end of the belt**". In other words, the Anik-B to F1 region. But, alas, it was not. No sign of any signals from North America.

At about this point in time Bob Behar was headed for Provo to bring us another proto-type; the first of his "Satellite Seeker" antenna remote control boxes. The pre "Satellite Seeker" control box for the Hero dish's motorized system was a simple "left" and "right" or east-west switch. The **new** control system allows you to have both full manual control (east or west), and, to also pre-set and then tell the dish to find any of up to 20 bird locations. By memory, on command. Behar arrived just in time to help us locate the problem with our polar alignment.

Now with a dish this size, when you are not properly aligned north and south, a number of "strange" things can happen. You have two adjustments to make; three actually. One, and

the most obvious, is alignment of north and south. The next, and second most obvious, is the proper elevation angle. The third, and least obvious, is the "declination offset" which is sort of a "fudge factor" built into the elevation system to allow you to track a non-perfect circle in the sky; the geostationary/ Clarke belt.

Valentine, Peter and I had argued for a full day about north and south. We took bearings on the AFC and SatFinder dishes, used a compass, used a surveyor's transit and I even went out after dark and re-sighted the north star. I should have listened to Valentine and Peter; their "native" intelligence was closer than my transit and compass wisdom. We allowed Bob Behar to arbitrate it for us and it took him about an hour to agree with my helpers. I had been off, by a whopping six or seven degrees, all along. Who says you can't teach an old dog new tricks!

Once we had the dish aligned north and south the real fun began. Most of the birds dropped in where they should. Ghorizont on the eastern edge was now so strong that it was perfect even on the Russian version of color bars. F1, the opposite end of the track, looked pretty decent as well. But some of the middle birds (Westar, Anik-B) were not what I calculated they should be. So we messed with the declination fudge factor and after an hour of fooling around (an antenna this big has big everything, including nuts and bolts; you don't

adjust anything without an effort), we had it locked in. Well, almost. We'll talk about ANIK B separately.

With the array tracking, Behar was anxious to try out his new control box. The proto-type we received had 12 positions on it (I am beginning to feel like **everything** we have down here is a proto-type of something!). It took Bob perhaps 15 minutes to make a simple screw driver (pot) adjustment for each of the 12 positions. He was like a kid in a candy store; each time he set the pot for one bird, he forced the machine to run back through all of the previous set positions. The "Satellite Seeker" control box is a good one. There is a digital read out that tells you where the dish is, to within .1 degree. And each time he returned to a pre-set bird it came directly back to that position and stopped. I never really cared for the previous east and west switch situation, since without a readout you never really knew where you were, unless you got very adept at ticking off birds as they flitted by on the screen.

Now the concept of moving six meters of antenna through the air, albeit it around a fixed (mount), is all well and good. The reality of it is that you are moving one heck of a big sail around and there are forces and stresses and momentum moving out there which you really have to be concerned with. The 1/4 HP motor that pulls on the heavy chain drive for the Hero six meter is more than capable, with the gear reductions em-

Introducing commercial quality Satellite Television for your home.

Now Satellite Technology Services offers you the commercial expertise to engineer the precise satellite television system for your home.

STS stocks a complete line of top quality components at competitive prices with full warranties.

And STS insures you fast delivery with its "ready ship" inventory program.

For more information and our free brochure, call our toll free number.

1-800-325-4058

Satellite Technology Services, Inc.
11684 Lilburn
St. Louis, Missouri 63141

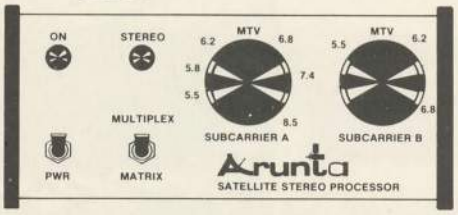
Dealerships may be available in your area.

HEAR YE HEAR YE

Satellite Stereo Processor

Dual Tunable Subcarriers • AFC

$395 Connects to video output



Decodes Mutiplex Stereo
(CBS Cable, HTN, Bravo, ESPN, Family Radio)
Decodes Matrix Stereo
(MTV, ARTS)

Arunta Engineering
Satellite Television Systems
Dept. CI Box 15082
Phoenix, AZ 85060
(602) 956-7042

Dexcel Receivers • LNC's • LNA's • Block LNC's
• Sky King Parabolic Antennas • Greenhorn Feeds
• Satellite Locator Calculators • Satellite Stereo Processors

ployed, of moving a multi-tonned dead weight about. It is also capable of destroying itself. That is, if the motor was to run amuck (as in run to the end and then not shut down), the motor plus chain would (could, will) drive the antenna super structure (struts) straight into the frame. The super structure would buckle before the frame would give or the motor would shut down. And that plainly worries me since we had a near disaster of this sort not once but twice in the first few weeks of use.

The first time we had a problem was when the chain slipped out of its guide trough. That allowed the chain to pull out of the gear drive, and at that instant the dish was free wheeling. It was (thank God) almost to the eastern edge of the travel when this happened and the dish "fell" only a foot or so before it crunched into the frame. No damage to the dish or frame, but it probably took six months off my lingering years. This was **our** fault; not the chain's. You have to be very careful when you adjust the tension on the chain, to insure that the chain tension is **balanced**. Too much torque on the west half of travel and the east half develops slack. And vice versa. Too much slack, and, well...the chain could slip out of the trough, thereby falling out of the gear drives. We fixed this possibility by being extra careful with the initial tension adjustment, **and** by placing some straps over the trough so that should the chain ever try to slip out in the future it cannot leave the guide trough. Again, we don't fault Hero for this; although some extra safety bars to insure the chain cannot leave the trough does seem like a good idea.

The next time we had a problem, it was a corker. Shortly after returning from Omaha I was running the big dish to Ghorizont to check on a Bulgarian dance festival that was due up there around 10 AM in the morning. The dish was moving east and it faltered briefly (I cannot see it from the operating position, but the Satellite Seeker box tells me what it is doing), and then went on. After 30 seconds of going on I knew we should be approaching or be at Ghorizont. There was no sign of a signal, and I hadn't seen either of the Intelsat's as we passed by the 40-30-20 degree locations either. I instinctively let off on the manual "east movement" button and went to the window to gaze at the dish. It was pointed to around 90 degrees west rather than being in the 20 degree region. Obviously it had either stopped moving, or it had reversed rotation on me even though the control box was telling me to the contrary.

At the dish, we have a pair of manual control buttons. You can stand there and push either east or west. I went down and did this, pushing east. **It moved west.** Then I pushed west. It moved west some more. I had lost east, and worse yet, no matter what I did it wanted to go west. As I stood there pondering this, with both hands on my hips and nothing touching the manual control buttons, the dish sprang into life and started moving again. West. I yelled loudly to Kevin, thinking he may have gone into the WIV control room and was operating the control box. No response. The dish kept moving. As I watched in dis-belief it headed further and further west, and it suddenly occurred to me that if it didn't stop soon it was going to cram the dish super structure into the frame. That was not going to do the parabolic curve any good!

Also at the dish we have mounted, for just such an emergency, a power control switch in a weatherproof box. Just inches before the "cram against the frame point", I finally woke up enough to remember **that** switch. I got it just in the

AVCOM QUALITY YOU CAN DEPEND ON

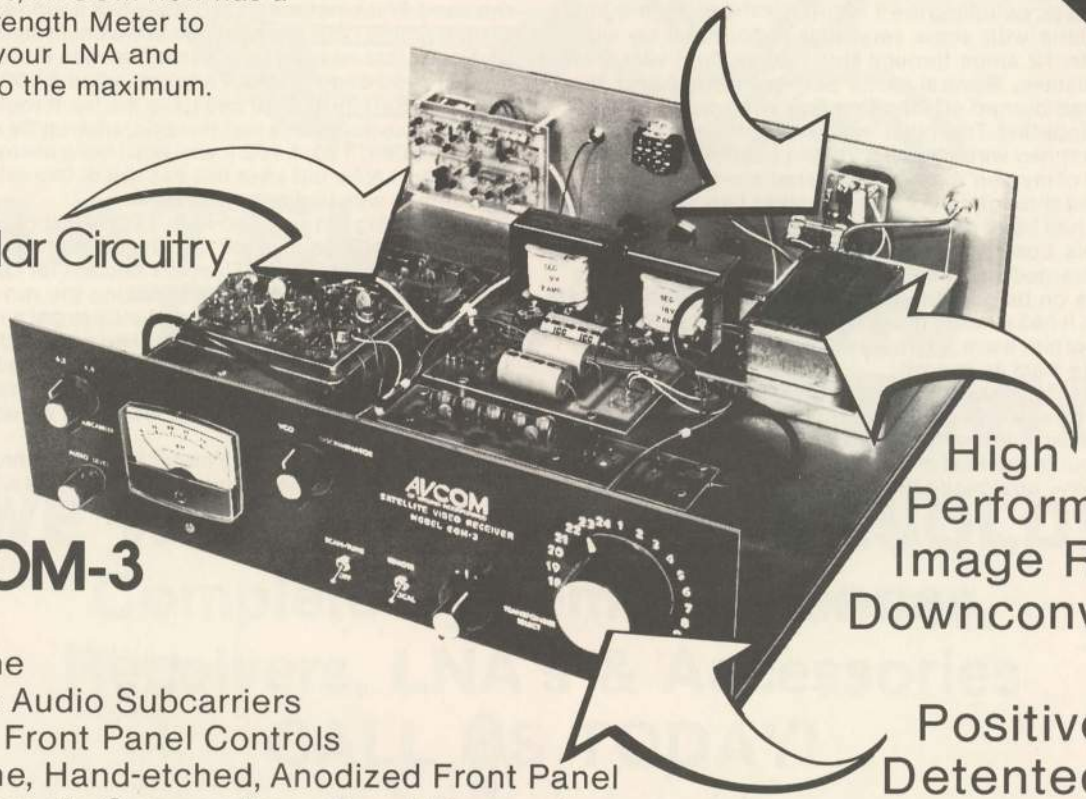
Satellite Receivers

NEW FEATURE!
Sensitive
SIGNAL STRENGTH METER
to peak dish within .1 dB!

Using the latest lab power meter techniques, AVCOM now has a Signal Strength Meter to optimize your LNA and antenna to the maximum.

Remote Metering Jack Included

Modular Circuitry



High Performance Image Reject Downconverter

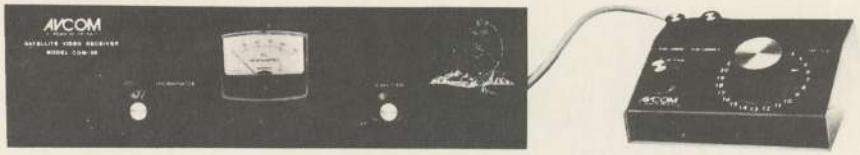
The COM-3

Positive Detented Channel Selector

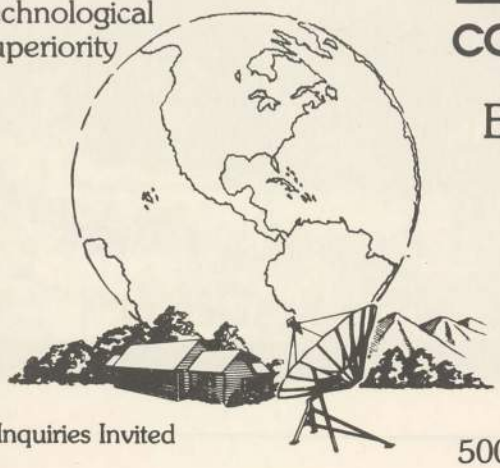
Scan-Tune
Up to Six Audio Subcarriers
Versatile Front Panel Controls
Handsome, Hand-etched, Anodized Front Panel
LNA Power via Coax or Rear Panel Connector
Hand held Remote Tuning Control Included

AVCOM

- Conservative Design
- Exceptional Reliability
- Quality Construction
- Technological Superiority



COM-3R complete with **REMOTE CONTROL UNIT**



Everything you need for your complete Satellite Earth Station

See your **AVCOM** dealer or contact us.

AVCOM
OF VIRGINIA INCORPORATED

Dealer Inquiries Invited

500 Research Road • Richmond, VA 23235 • 804/794-2500

nick of time. The dish glided, silently, to a stop only a 16th of an inch from the frame.

Once again my problem turned out to be "Proto-Type-Itis". The east-west controls are operated by reversing some windings inside of the ¼ HP motor. Leads are brought out of the motor to a pair of 12 VDC operated relays. The relays, properly wired up, reverse the internal windings on the motor to reverse the motor drive direction. The motor operates from 110 VAC and it draws around 5 amps normal load and probably around 12 amps at initial start surge. The wiring of the 12 VDC operated delays, switching the 110 VAC for the motor around, had been done with some very light (#20) hook up wire. Drawing 5 to 12 amps through this type of light wire was plainly a mistake. Several wires had gotten hot and the insulation had burned off, shorting first two wires and then three wires together. The initial "west only" problem occurred when the first two wires heated up and became one. The "I have a mind of my own" problem occurred when the third one finally melted through to contact the other two.

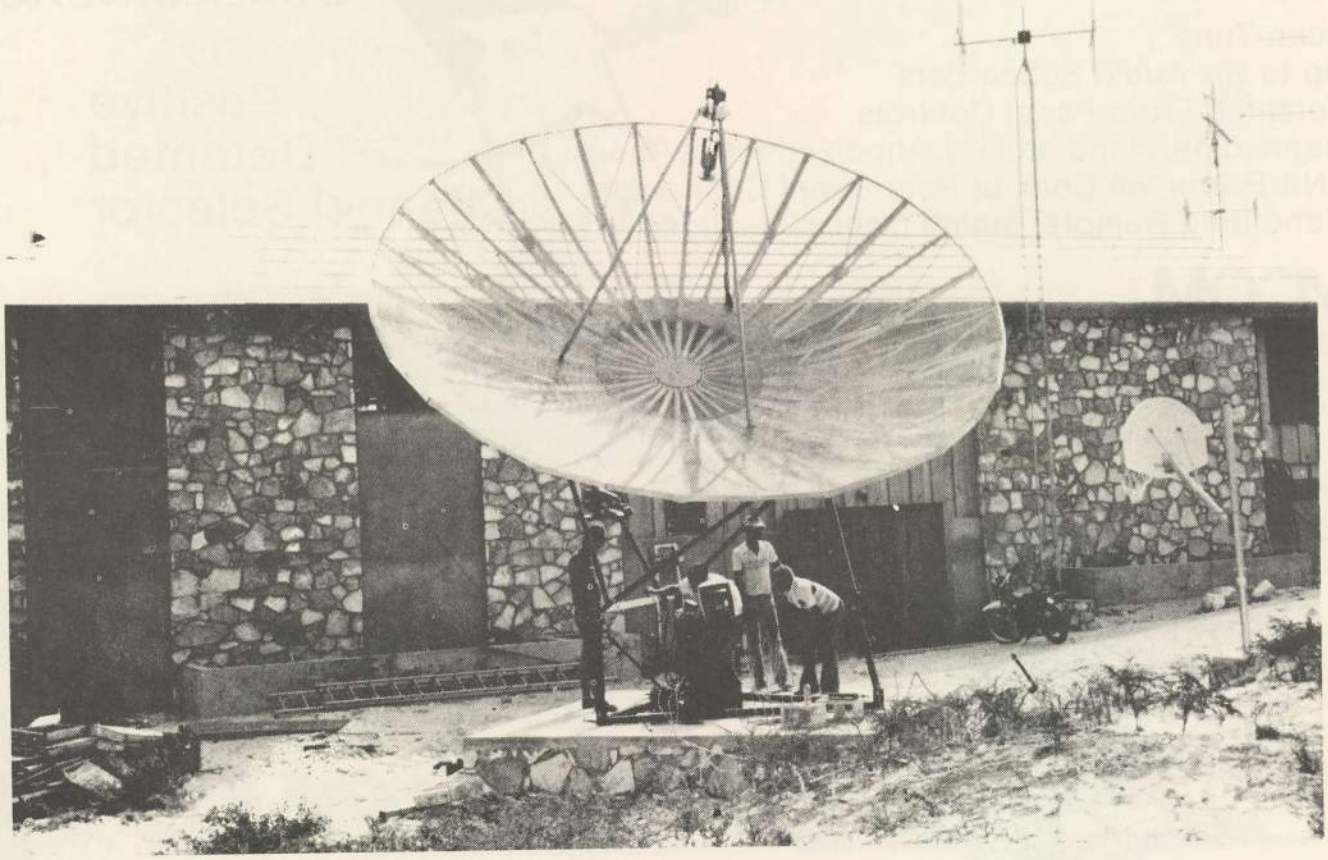
All of this has been corrected in the present generation of Hero controls. Long before we reported the problem. But the lesson we learned will remain with us for a long time. A big dish borders on being a device of considerable destructive power when it has a motor drive. It can destroy itself, or it can do considerable harm to things around it. Even without getting loose from its mount!

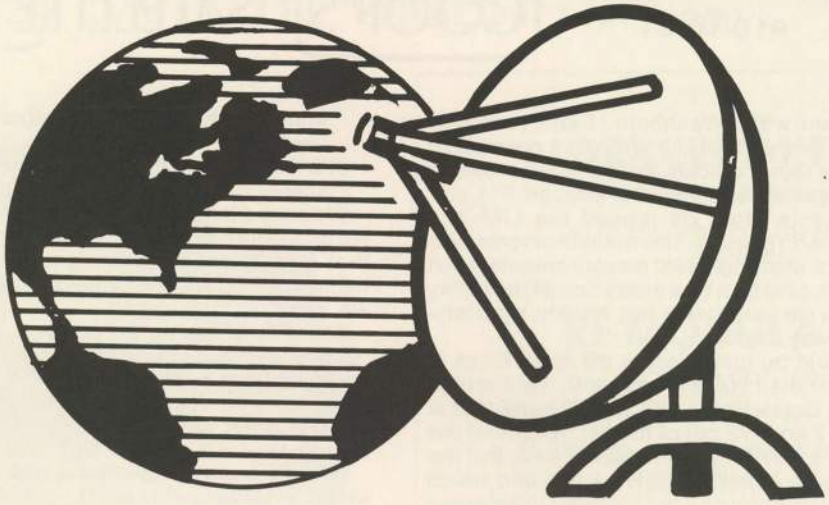
Now to performance. It was our hope that the 6 meter Hero would do as well as, or better than, the 5 meter AFC. The AFC five meter has been our mainstay antenna since we wrestled it out of the hold of an ocean freighter one year ago. It has a Speavy dual-mode feed and a pair of (very) carefully selected 85 degree Dexcel LNAs on it. We feed the LNAs with ½ inch hard line run directly to the N connectors (no flexible pigtails), until we get clear of the dish and then we connect to 7/8" hardline for the 100 foot run to the receivers. Living down here in the "fringe area", we leave nothing to chance.

The first LNA we put on the Hero 6 meter was a disappointment. It was a Dexcel, and an 85 at that. Bob Behar had hand picked it from a recent shipment because according to the spec sheet the "worst case" noise temperature was 78 degrees while the unit averaged 70-72 degrees over most of the band. This one looked, on paper, like a winner. After some disappointing CNR measurements we finally determined this particular (brand new) LNA was a bummer. It was not even a decent "150 degree" unit. Then we pulled a 100 degree unit off of the SatFinder dish and gave it a try. It took us another two hours to determine that this one, another Dexcel, was not even a decent 120. A 100 it was not. I have always been high on Dexcel LNAs, but after this two out of two experience my confidence was beginning to shake.

With nothing but some ho-hum 120s left about, we couldn't complete CNR checks of the 6 meter Hero before Bob returned to Miami, or the Coopers headed for Omaha. It was only after returning, and after repairing the run-away motor drive, that we finally got the opportunity to get a replacement Dexcel 85 degree unit (which checked out good) into operation. It made no sense to us to try comparing the 5 meter AFC dish with high quality 85 degree LNAs against a 6 meter antenna outfitted with anything less than an equivalent 85 degree LNA.

First we ran the 10 foot/3 meter SatFinder through the full North American domestic orbit belt, equipped with the same





SATELLITE TELEVISION SYSTEMS

WE WILL NOT BE UNDERSOLD!!

Complete Systems, Antennas, Receivers, LNA's & Accessories

CALL US TODAY!

812-238-1456

hoosier electronics

"Nation's Largest Total Communications Distributor"

P.O. BOX 3300 • TERRE HAUTE, INDIANA 47803

85 degree Dexel LNA and with a Washburn / Earth Terminals receiver. The metering on the Washburn makes it possible to do CNR measurements rather quickly. We selected a couple of transponders on each of the birds (D3 through F1), and make hard measurements. Then we **moved** the LNA and receiver **to the Hero** and repeated the measurements. We took this approach since any single bird measurements (such as F1) would not, we felt, give us a true indication of the ability of the Hero. The results we found were not, frankly, a pattern. At least not all of the way through.

In theory, there should be just about 5 dB more C (as in carrier) with the 6 meter than you will have with the 3 meter. We found this to be the case with D3, W3, W1, F2 and F1. That leaves D2 (D1), A-B, A-2 and W2 out of the list. We found the "added gain" on D2(D1), and W2 to be closer to 4 dB. But the real mystery proved to be Anik-B (A-B). Here is a bird which rides in the 3 to 4 dB CNR region on a ten foot SatFinder at our location and with a "5 dB added gain" 6 meter Hero, barely above 5 dB CNR. Clearly something is strange here.

Let's dispose of tracking error possibilities first. F1 is at the western end of the track. D3 is at the eastern end of the North American belt, with W3 close by. Both ends show proper "gain added". A-B is just about in the **middle** of our North American **portion** of the belt. Our first inclination was that the big 6 meter dish was having declination tracking problems; it was possibly not tracking **that** portion of the arc. Unfortunately, two facts set that possibility aside.

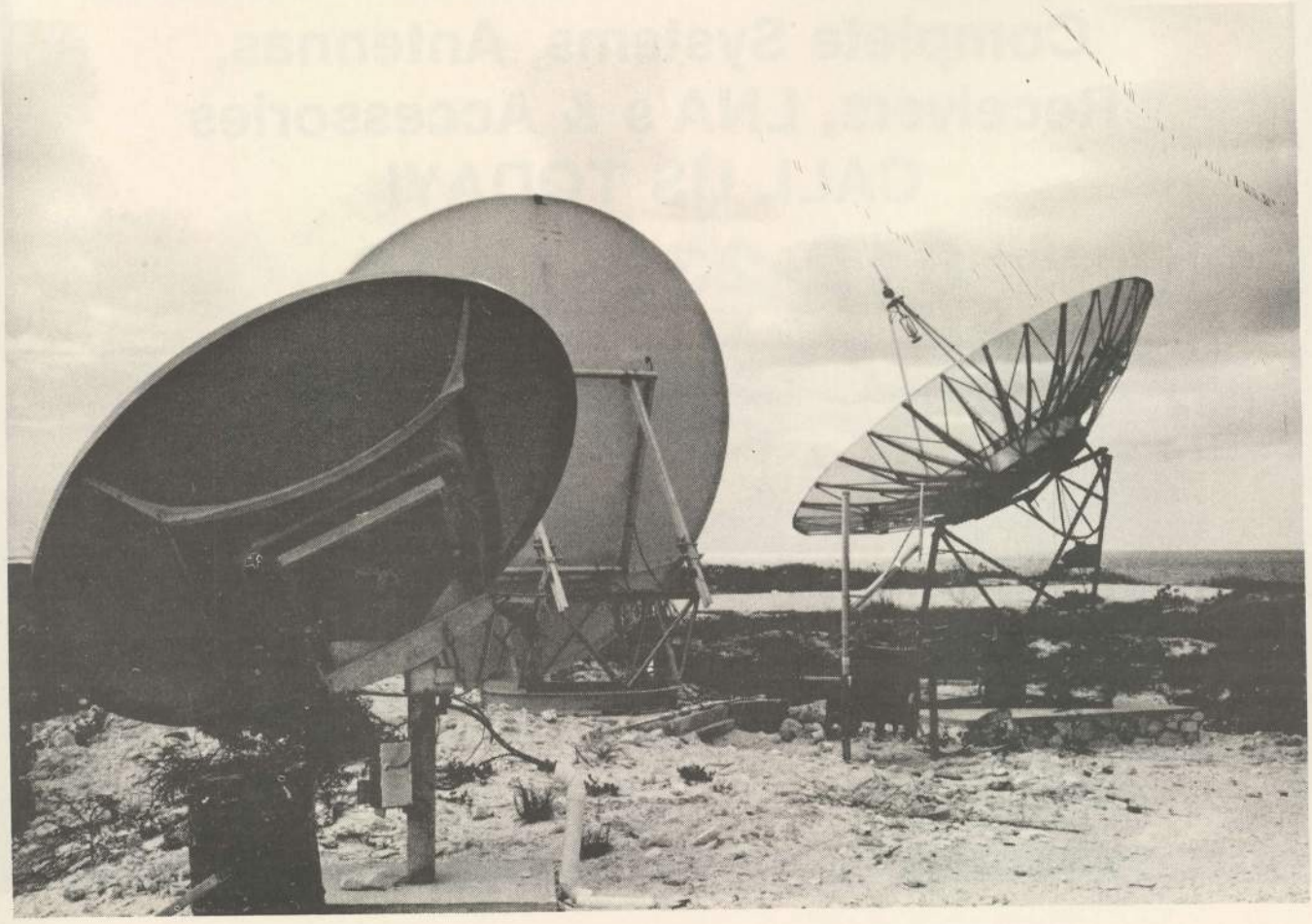
1) If the dish was experiencing tracking errors in a portion of the belt, some fine tuning on the nose (elevation) should bring it back onto the bird in question. We spent several hours on Anik B trying to improve things, but always ended back where the elevation was set for proper full arc tracking.
2) Brids close by (F2 in the case of A-B) should also show similar gain reductions. They do not.

We posed this "question to Taylor Howard" in Omaha since we had worked with the dish enough before leaving to know that Anik-B was not coming up like it should. Taylor is still thinking of a good explanation for our observations. So are we.

The only similarity we can see, amongst those birds that "refuse to come up", is that each has a boresight that is far removed from **our** location. The COMSTAR and W2 birds are well known for being "tight" with signal levels off of boresight. ANIK-B does not have **that** reputation, but it is certainly boresighted a long ways from the Turks and Caicos.

Is there a clue there? We doubt it. But there is a **message** and it reminds us of similar problems some private installations have faced in extreme southern Florida. It has been known for several years that locations only a few miles apart in south Florida can be completely different in F1 performance; that a 10 footer at one location can outshine a 16 footer at another. Nobody has ever adequately explained this one to us. There seems to be something similar happening in our situation.

What is really perplexing is that the **anamoly** (fancy word for "**unexplained situation which does not meet the expected results**") defies several basic laws of physics. The foremost one being that satellite signals are merely RF signal voltage. And if an antenna of certain size and gain will capture so much of that signal voltage, a second antenna of additional size and gain **must** capture more of that signal voltage.



MAKE IT TRACK- Bob Behar "said" he came down to bring us the "Satellite Seeker" proto-type control box. He worked his fanny off in our hot Caribbean sun, and then spent the afternoon chasing up and down the beach on Tasha's three-wheel Yamaha and swimming with Kevin and I. He claims he saw a 10 foot Sting Ray off our beach. (They are harmless Bob; but scary as hell!)

Except down here!

Final Words On Hero 6 Meter

Would we put in another Hero six meter down here? That's the bottom line, of course.

Having complete horizon to horizon motor control with an antenna that has the gain of the 6 meter is nothing short of being in satellite heaven. I'd like to have another one alright; but fear that if a second one made sense (I'm not sure it does right now), a third one might also make sense.

There is a very considerable market for big antennas that don't fall into the $35,000 up price class tht he S-A 7 meter does. The Hero 6 meter, like its smaller 5 and 4 meter family members, is a good value. But there are these caveats:

1) **Any antenna this big** needs a visual and fail-safe system built in, that tells the operator when he is approaching either end of the rotating swing. I'm putting one on ours, and backing that up with a dedicated cheapy black and white TV camera trained on the dish at all times. I don't want some semi-trained WIV employee running the dish into the frame. Ever.
2) **Any dish this big**, that comes in erector set form, **must** be proofed on site or you will never realize the antenna's true gain. Proofing means having a template, from the manufacturer, which allows you to adjust each support strut

DEXCEL DXR1000

State of the art quality
with down converter/LNA.
$1795.00

RF MODULATORS

Crystal controlled
Switchable Ch. 3 or 4 wired and tested
2 Phono Jacks - Audio - Video in
1 "F." Fitting RF Out
119.95 with Pwr. Supply
$99.95 W/O Pwr. Supply; 12 volts
Special - Slug Tune Modulators Ch. 2 - 5 - 6
$79.95 W/PWR $69.95 W/Out 12 Volts
Wired & Tested

S. T. E. S.
A E A T
T L R A
E E T T
L V H I
L I O
I S N
T I S
E O
N

Inc.

P. O. Box 188 Petersburg, WV 26847

Phone (304) 257-4577 1-800-624-0851

UNIVERSAL REMOTE CONTROL

Fits all ICM and Dexcel Receivers
Complete with 25 ft. of cable & plug
Multi-turn for precise fine tuning
$49.95

SATELLITE POCKET COMPUTER

RADIO SHACK TRS-80®
Complete with Satellite
Location Program in Memory
Turnon and Run
Low Price $229.95

precisely to the parabolic curve. Lacking that, you'll end up with a six meter surface and possibly 4 meter performance. Why bother to put in a big antenna if you are not going to get maximum gain out of it!

3) **No antenna this big** should be undertaken, as a project, by somebody in a hurry. Not the first time, anyhow. You will do several things wrong, no matter how good the instructions may be. And if you try to push too fast, you'll not catch your mistakes until it may be too late to correct them without major surgery.

I salute Bob Behar for having his dedication to making a big antenna work, and to provide high value to the user. I know Bob well enough to know that he is constantly evaluating better ways to make his products work and I expect his full Hero line to be in a constant state of improvement and refinement in the years ahead. That doesn't bother me at all; it would bother me far more if he chose to freeze the design at some stage. The Bob Behars of this industry are what we have going for us!

CONTEST/CONTEST

A SUPER WEEKEND

At the recently completed SPTS '81 in Omaha, Bob Cooper discussed with several manufacturers of satellite hardware the concept of holding a weekend long "Satellite Enthusiasts Contest". The idea is that if you are given a set of rules to follow, and a time during which others like you will be following the same rules, you could spend a weekend concentrating on seeing just how many different satellite signals you could "log" and "identify".

One of the on-going problems with the rapid growth of the programming and relay end of the business is that dozens of new service users (literally) are showing up every week. Many of these are audio or data rather than video, but they are new to the satellite service none the less. Keeping up with what is available, when and where (i.e. what time and on what transponder) is more than a fulltime job; it borders on being an almost impossible task. So we conceived the idea of setting aside a special weekend during which everyone who wants to tackle a fun project could individually set out to see how many different satellite signal types he or she might tune into, **and identify.** Each participant would compete against others in his or her general "class". That is, people with fixed antennas that cannot be moved to another satellite (except with great effort), would be in one class of participants. This class would be free to select the bird they wished to zero in on, for the contest weekend, but they would have to stay with that bird for the full weekend. A second class would be made up of people who have moveable dishes which are not motorized. This class of entrants will be free to move their dish from bird to bird during the contest period, but they have

SATELLITE Video-Audio RF MODULATORS

ATTENTION DEALERS: Join the growing network of dealers discovering the colorful, crisp world of the MICRO-VERTER II High-Fidelity TVRO modulator. Self-contained. Tunable over several channels. Available from Ch. 5 to 13 plus low UHF! Also available in plug-in module form.

PHONE or write TODAY- DIAL: 402-987-3771

"Over 17 years of video modulator expertise"

ATV Research

13CSD-Broadway Dakota City, NE 68731

LOW COST/HIGH PERFORMANCE

80° K

50 dB Gain

An excellent Low Noise Amplifier that can bring in a sparkle-free signal even if your dish is in a fringe area! Its four stage, hazard protected circuitry uses the latest GaAs FET technology to drop the kelvin and improve signal reception. Limited, custom production of this new design will be available Mid-July.

Model No. LC/80; 80° K-50 dB Gain ____ **$1995.00**
Model No. LC/100; 100° K-50 dB Gain ____ **950.00**
Model No. LC/60; 60°K-50 dB Gain ____ **7500.00**

All prices FOB Hartford, CT, for more data, write or call:

Satellite Electronics Systems, inc.

P.O. Box 14418 • Hartford, CT 06114 • (203) 589-0473

LNA Breakthrough

Off shelf delivery on Amplica LNAs—wholesale dealer prices

120°—$595 105°—$795
110°— 695 100°— 895

(All feature through the line power, full data sheets.)

Amplica's breakthrough on lightning retardation enables us to offer a full year warranty—even if lightning makes a direct hit. Quantity discounts on Amplica LNAs to National Microtech distributors available.

Call Dave Fedric and join the Microtech team as a dealer or distributor **TODAY!** Call toll free: **1-800-647-6144.**

National Microtech

to be people who are forced to go through a manual (i.e. outdoor) moving exercise with their dishes. The third class would be for those elitists who have motorized dish arrays. In theory, they can move from bird to bird at the touch of a button and that would give them an advantage over those who do not have such equipment.

Now we felt that there should be some incentives for participating in such an event, and for being the "best" in your class. Each participant will use official contest logging forms which **CSD** will supply, and each "logging" will tell us, when we receive your completed forms, what you saw or heard, when and where. From the mountains of data we expect to receive on these logging forms, we will prepare the most thorough "**Satellite Services Reference Book**" ever assembled. In effect, each contest participant will become a "reporter" for the **SSRB** and it will be a joint, worldwide effort. Naturally if this works reasonably well, we would like to repeat it at least once per year, thereby updating the basic data available and benefiting each of us by giving us a reference book that is current, or nearly so.

So we went to a few of the manufacturers and asked them if they would be willing to donate equipment as prizes. Just so you will know up front, for the "donation" of equipment a supplier in return will receive advertising space in **CSD** (we are in effect "buying the prize equipment" with advertising space), and, in the "Satellite Services Reference Book". Most contests don't let you in on such secrets; we feel since this is a small industry with no room for secrets, we wanted you to be aware of this "arrangement".

To our overwhelming surprise, each of the suppliers we discussed this with at Omaha said that "yes", they wanted to donate prizes. We have three TVRO receivers already pledged as prizes, as well as a couple of satellite antenna systems and even a 6 foot big-screen big-name-brand projection television receiver (valued at $4,000). In short, we have a start on prizes which is almost unreal!

The prizes will be awarded for the top winners in each of five categories. One of the categories is capable of being redundant with winning in another category so we are setting that one straight up front as well. Here is how this will work:

1) **Grand Prize - fixed dish.** We have already defined what a fixed dish entrant is; we'll have a prize in at least the TVRO receiver/antenna category for the big winner here.
2) **Grand Prize - manual dish.** Again, we've defined what this entrant has for an antenna. And again, we'll be giving away at least a full TVRO receiver or antenna for the winner here.
3) **Grand Prize - automated dish.** Once again, a minimum of a new TVRO receiver or dish antenna here.
4) **Grand Prize - non-USA.** This category is open to anyone who lives **outside of** the U.S. (48 continental states), Canada, Mexico, Bahamas, Grand Cayman, Turks & Caicos, Hispanola, Bermuda, Puerto Rico or US Virgin Islands). Again, at least a TVRO receiver or equivalent as a prize.
5) **Grand Prize - sprint.** During the contest there will be a designated three hour period. The three hour period will apply to everyone, regardless of where they are. In that three hour period the object will be to see how many different satellite services you can "log" (i.e. see or hear) in a rush or "sprint" condition. With time working against you, and with every other entrant also working in the same 3 hour period "sprint", it will be the peak activity period. The entrant that accumulates the maximum number of "points" in that period will win the projection TV set!

Now the official rules will not be released (here in **CSD**) until we have established the weekend during which the contest will be held. Our first thought was to schedule the contest over the period just after the F1 to F3R switchover. However, after carefully considering what that really means, we decided to wait a bit longer than that. This says that the contest period will probably be in late January or February (yes, we know this makes it tough on people who have to manually crank antennas in the north!). Even though the "rules" will not

GENUINE HOWARD TERMINAL PC CARDS

Bob Coleman and Tay Howard are now producing six PC cards which make duplication of the Howard Terminal (latest version) a snap!

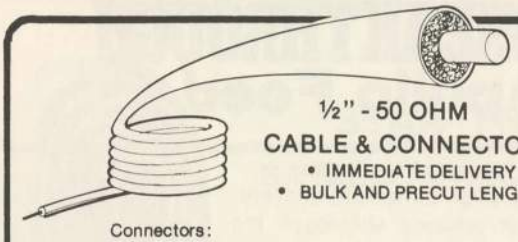
(A) Dual Conversion (4 GHz to 70 MHz) - $25.00
(B) 70 MHz IF and Filter - $25.00
(C) Howard Demodulator - $40.00
(D) Dual (2 channel) Audio - $25.00
(E) Single Channel Audio - $15.00
(F) AFC and Metering - $15.00

Order from: Robert M. Coleman, Rte. 3, Box 58-A
Travelers Rest, S.C. 29690

Apollo™ X1
Remote Antenna Lift
wholesale dealer price **$495**

Microtech's engineers have broken the price barrier with a high quality retrofit antenna lift. An industrial quality actuator takes the place of the old trailor jack on polar mounts. The contemporary styled remote control allows antenna direction from the easy chair. Call Dave Fedric at Microtech today, **TOLL FREE 1-800-647-6144**, for all the details.

National Microtech



½" - 50 OHM
CABLE & CONNECTORS
• IMMEDIATE DELIVERY
• BULK AND PRECUT LENGTHS

Connectors:
Male $14.00
Female $11.00

CABLE $1.15/ft.

CALL TODAY **404-962-4800**
STARK & ASSOCIATES, INC.
641 Grayson Highway
Lawrenceville, Georgia 30245

DEALER SPECIAL

10-foot high quality fiberglass dish and polar mount - $995.
Depth 24½"
F/D Ratio .3
Focal Length 36.67"
Gain 39.5 at 4 GHz
One or two piece construction

Also if you like we will mount the dish and polar mount on a trailer complete with running lights for $695 more.

F.O.B.
HAMILTON SATELLITE SYSTEMS
Box 36, Stearno, KY 42647
606-376-8781

AFFORDABLE EARTH STATION EQUIPMENT

Gillaspie & Associates
MODEL 7500 SATELLITE RECEIVER
Including an "Image Reject Mixer"
DEXCEL LOW NOISE AMPLIFIER
120°K. 50DB Gain
System price $1795

Gillaspie & Associates
SINGLE CONVERSION MIXER $385
3.7-4.2 GHZ to 70 MHZ. Same Mixer as above.

CALL FOR TOTAL SYSTEM PACKAGE PRICE

SATELLITE RECEIVING SYSTEMS
1515 Jarvis Court, San Jose, CA 95118
(408) 266-3250

NETWORK AFFILIATES WANTED

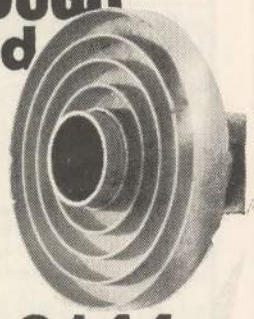
National Microtech wants dealers interested in one-day rentals of Earth Stations. Up to $1200 per day. 10 engagements per month possible. Join our network now.

Call today
1-800-647-6144

BREAKTHROUGH Apollo Feed

These new high performance feeds are ready for immediate delivery From National Microtech. Inc.

1 unit $59
5 units $49
10 units $42
100 units $35



1-800-647-6144

SPACE COWBOY

High Performance
10 Ft. Satellite TV Antenna
ONLY $325

Complete Systems From $2495

Ask about our new 16 ft. and 20 ft. SPACE COWBOY antennas. The price and performance will blow you away!

GHOST FIGHTERS
TV ANTENNA SPCIALISTS
P. O. Box 8136 - Missoula, MT 59807
1-406-543-4333

be released for a short period yet, here are some things you **cannot** do.

1) Multiple antennas - sorry, **only one** satellite **antenna** per entrant.
2) Multiple receivers - sorry, **only one** satellite **receiver** (to be used) per entrant.
3) Multiple "operators" - sorry again, this is a contest pitting individuals against individuals. Even those who have manually adjustable antennas are going to have to certify that they "did it alone", or, suffer a "point penalty" for having to enlist assistance with their dish moving exercise.

There are two general categories of signal - services on the bird. There are video signals, and, narrow band (audio, data) signals. There are far more of the latter than the former, and the non-video signals are often difficult to identify. If you do not have a copy of **"Coop's Satellite Operations Manual"**, which discusses reception of non-video signals, we suggest you order one promptly. Why? Well, because the winners (we predict) will make good use of the non-video signal sources in their weekend of signal logging. The video signals will count more "points" than the audio signals, **but**, when you consider that there may be as many as 1,200 different audio or narrow band signals on a single transponder...well, it becomes clear that anyone who is serious will want to be capable of tuning in the non-video signals.

Strategy? Well, there are several things that the smart "planner" might do. We'll discuss our thoughts on some of these concepts next month. In the meantime, start thinking about sending the wife and kids downstairs to enjoy terrestrial TV for one weekend this winter, while you concentrate on logging every signal you can find on the bird or birds of your choice. Oh yes, **one of the entrance requirements** will be that you submit a **photo** of you standing next to your dish antenna. While the weather is still bright and clear, we suggest you get that photo taken and tucked away for safe keeping!

SVS '81

AN EXPERIMENT

LIVE AND IN COLOR

The forthcoming **Satellite Video Show** scheduled for November 20/21/22 in Anaheim, California will attempt to draw heavily from the southern California area. The emphasis will be on the "marriage" or inter-action going on between the home satellite or private terminal system, and, the explosive growth in big screen projection systems and associated home-video apparatus.

One way to demonstrate that "marriage' is to build the Show around video as a communications medium. The exhibit hall for the host hotel (Anaheim's brand-new Marriott)

will be "open" for extended hours, all three days. This is being done to handle what is expected to be a very large crowd of both dealer and retail buyers from the California marketplace. The traditional seminars, usually conducted when the exhibit hall area is closed down, will be held simultaneously to the exhibit hall hours.

The seminar sessions meeting hall is relatively small; but to make the seminar sessions available to attendees **all sessions will be televised**, live, and sent through the Marriott MATV system. And here is the added "wrinkle".

At approximately five locations through the exhibit hall, "Satellite Viewing Islands" will be established. Large screen TV screens will be set up throughout the exhibit hall, with seating at each location. In this way an attendee can **stay** on the exhibit hall floor, and take in the seminar sessions! Of course by sending the live sessions throughout the MATV system as well, those who want to escape the crowds can retire to their rooms for sessions and still not miss any of the seminar sessions. If you have the ability to bring your own VCR, you will be able to tape (live) the sessions as they occur. This promises to be a big plus for those attendees who want an "early generation copy" of sessions, without the usual tape dub sacrifices in quality.

Now in addition to the live system coverage of the sessions, we will also be using the same MATV system channel to send along to you (whether in your room or in a viewing island location on the exhibit hall floor) an additional 20 hours or so of special "all about satellite TV techniques" programming, from past SPTS/SBOC events.

In anticipation of a large crowd, spread over the three days of exhibits, the "attendance fee" has been dropped to $90 (pre-registration rate). Past SPTS events have been $150 each. With the deployment of F3R expected this month (October 16th is the tentative launch date), and Satcom F4 to follow before the end of the year, the rapid growth in satellite video services is once again starting. Early in 1982, Westar 4 will go into orbit, to be followed at 4-6 month intervals by new video satellites through at least 1985.

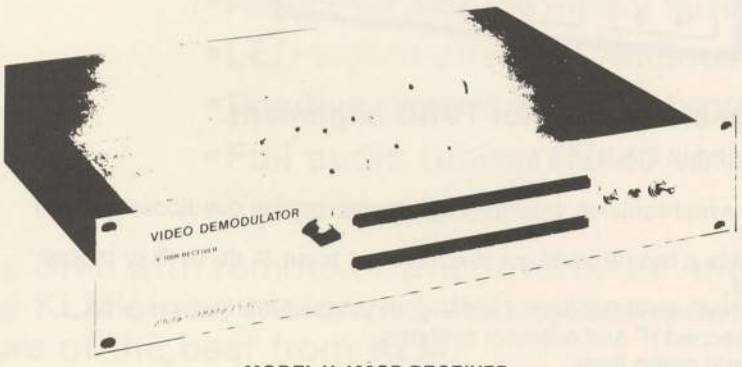
Past exhibitors at SPTS '81 Omaha and other recent SPTS events have already been notified of the opportunity to contract for exhibit space at SVS '81. If you are new to the industry and interested in being an exhibitor at Anaheim, you are advised to contact Rick Schneringer at STTI, P. O. Box G, Arcadia, Oklahoma 73007 (405-396-2574). Exhibit space is limited.

COMING IN NOVEMBER

Build-It-Yourself Stereo/Quad
Audio decoder for Music Television (MTV)

VITALINK
COMMUNICATIONS CORPORATION

STAR-TRAC™
SATELLITE RECEIVER



MODEL V-100CR RECEIVER

- Satellite Receiver
- Four Subcarriers Standard
- Inboard Modulator Standard
- 24 Channel Agility
- Built-In LNA Power Feed

1330 Charleston Road, Mountain View, CA 94043, (415) 968-5465, Telex: 345566 VITALINK MNTV

The Model 310 RF Modulator is a double breakthrough.

State of the art technology

The Model 310 is the only low price RF Modulator available with built in vestigial sideband filter. The integrated circuitry represents the state of the art in sophisticated performance electronics.

- 110 Volts AC operation with optional A-3 Power Pack
- Standard input/output connectors
- Switch selected output on Channel 3 or 4
- Integrated circuits for long life & stable operation
- Maintenance free

Introductory Low Price $69.95*

The Model 310 RF Modulator retails for $129.95, yet it is available to you, complete with power supply, for as little as $69.95,* in quantities of 1,000. Super discounts are also available for smaller quantities.

Break through the price barrier. Call or write now for more information on the Model 310 RF Modulator.

PC

Power Consultants
P. O. Box 308/North Little Rock, Arkansas 72115
501-753-5404

GBS 2000 – TVRO TEST SET
WHEN YOU STAND ALONE, YOU'D BETTER BE GOOD

All the signals needed for TVRO alignment.

- NTSC color bar generator with full EIA-NTSC sync.
- Built-in audio generator.
- Synchronizing generator for synchronizing external equipment such as oscilloscopes and spectrum analyzers.
- RF tunable from 3.7 to 4.2 GHz – the RF level out is equivalent to an 11 dB CNR or higher LNA feed. Approx. – 30 dBM.
- Black and white or color composite video output for aligning video amplifier systems.
- 70 MHz output for aligning second IF and detector systems.
- External video input – external audio input.
- The audio system has 4 commonly used, pre-selected sub-carrier frequencies available from the front panel.

NEI

Newton Electronics, Incorporated
2218 Old Middlefield Way - Suite I
Mountain View, CA 94043

(415) 967-1473

SAT-TEC™ R2B
The leader in low cost TVRO

The R2B, the most highly integrated receiver on the market today!

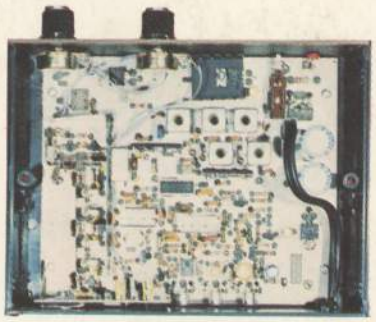
Sat-tec

The name you know FIRST!

- FIRST Low Cost Receiver
- FIRST Volume Production
- FIRST With Off-Shelf Delivery
- FIRST To Ship the Innovative Divide By 2 PLL
- FIRST With Channel Lock AFC

The Sat-tec R2B receiver is our latest full feature receiver, tailored to commercial equipment specifications at a price you can afford. the R2B's single board construction eliminates problematic interconnections and innovative utilization of all components results in a reliable and proven design. Operation is simple—a single tuning knob does it all, and our unique Channel-Lock AFC keeps the tuning sharp and accurate. A new feature is our variable audio tuning to give you complete selection of all subcarriers—without the use of additional plug-ins or devices. This, together with the R2B's full frequency coverage makes it truly compatible with all domestic and international satellites.

For superior value as well as lowest system cost, the choice is but one—the R2B! See your dealer today or write to us direct.



SPECIFICATIONS

Frequency range:	3.6-4.3 GHZ tunable
Audio range:	5.2-7.6 MHZ tunable
Threshold:	8db CNR
IF bandwidth:	30 MHz for full fidelity video
LNA power:	15 volts regulated for up to 2 LNAs
Outputs:	Standard one volt audio and video, compatible with VCRs, monitors and modulators
Optional:	BC-1 RF modulator kit, tunable channels 3-6 with sound

Sat-tec Systems
div. Ramsey Electronics, Inc., 2575 Baird Rd., Penfield, NY 14526, 716-586-3950