COOP'S SATELLITE DIGEST

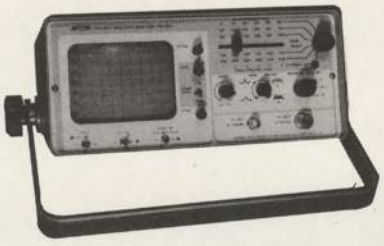
SEPTEMBER 15, 1986

INTERNATIONAL EDITION

THE FIRST NAME IN SATELLITE EQUIPMENT

AVCOM®

NEW



PORTABLE SPECTRUM ANALYZER
AVCOM's NEW AND IMPROVED PSA-35A

AVCOM's new PSA-35A Portable Spectrum Analyzer features increased vertical sensitivity with front panel selection of either 2 dB/Div or 10 dB/Div operation. We have also made frequency selection more efficient with a new 1250 to 1750 band select position. The addition of these features produces a major increase in versatility with no increase in cost. The PSA-35A is lightweight, portable, and can be operated from its own internal, rechargeable, gel-cel batteries, or 110 Vac. The frequency coverage of the PSA-35A is from less than 10 to over 1750 MHz, and from 3.7 to 4.2 GHz in 6 bands (including current 12 GHz LNB's).

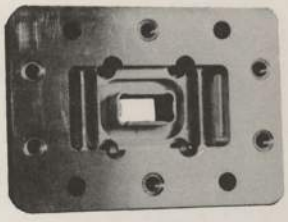
The new and improved AVCOM PSA-35A Portable Spectrum Analyzer is the most economical and cost effective answer to your satellite communication equipment installation problems. It will soon become indispensable for measuring and documenting system performance, accurate and rapid testing, alignment, and precise Terrestrial Interference identification.

Installers of new or retrofit dual feed C/Ku band and single feed Ku band systems know that Ku band instaliations require extremely accurate dish tracking. If the dish is off only a fraction of a degree it can mean the difference between a terrible (or no) signal and an excellent one. Your PSA-35A is both C and Ku band compatible and is the perfect instrument for the critical dish alignment and tracking requirements necessary for maximum satellite signal reception. **$1965**

URLA-1450 — AVCOM's Uniform Response Line Amplitier is a carefully designed line amplifier having excellent frequency response over all block downconverter frequencies from 270 to 1450 MHz. $68.00

TISH-40 TERRESTRIAL INTERFERENCE SURVEY HORN A highly directional, high gain horn for quick and accurate site surveys with the PSA-35 and any LNA. **$127**

NEW



CKA-12 MICROWAVE FLANGE ADAPTER For C to Ku band waveguide the CKA-12 allows the use of larger C band waveguide components such as feedhorns, transitions, etc... with Ku band LNA's and LNC's. **$87.00**

INTERNATIONAL SATELLITE RECEIVER

COM-66T RACK MOUNT INTERNATIONAL RECEIVER Special options result in a block downconversion receiver offering the ultimate and specialized international satellite reception requirements. Triple IF filters are standard. **$1189**

NEW

MSG-5 MICROWAVE SWEEP GENERATOR Digital LED readout to accurately determine frequency, sweeps 3.7 to 4.2 GHz to bandwidths less than one MHz at any center frequency between 3.7 and 4.2 GHz. **$1087**

MSG-1750 MICROWAVE SWEEP GENERATOR Sweeps frequencies in the 950 to 1750 MHz Block Downconversion band, LED readout, can be used with PSA-35A to specify TI filters. **$995**

IFSG-70 MICROWAVE SWEEP GENERATOR Sweep frequencies from 50 - 90 MHz frequency can be accurately read on a digital LED display. **$932**

SCPC HIGH STABILITY RECEIVERS

SCPC-500 SINGLE CHANNEL PER CARRIER IF PROCESSOR Block converts all signals on transponders 1 through 24 to an intermediate frequency of 50 to 550 MHz. An extremely stable microwave oscillator and phase locked loop virtually eliminate drift. **$1245**

SCPC-2000 SINGLE CHANNEL PER CARRIER RECEIVER A complete, professional rack mounting 4 GHz input, baseband audio or data output receiver, the AVCOM SCPC-2000 is the most reliable and cost effective SCPC receiver on the market today. **$1875**

QUANTITY DISCOUNTS AVAILABLE
CALL FOR PRICING

AVCOM®
500 SOUTHLAKE BOULEVARD
RICHMOND, VIRGINIA 23236
TELEPHONE (804) 794-2500
TELEX: 701 545

Terms and specifications subject to change without notice.

TOP OF THE MONTH

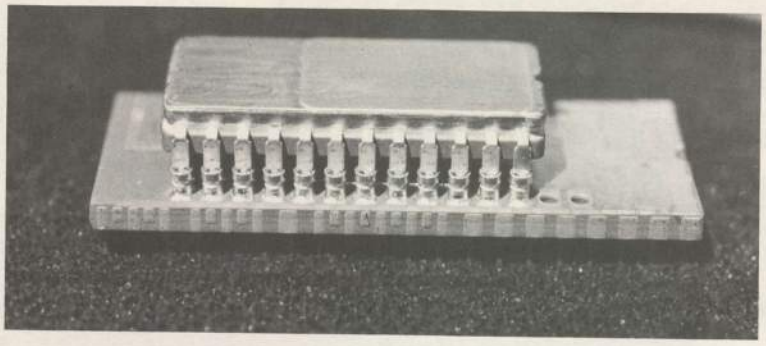
FRESHLY back from Nashville, we are pleased to report there still is a home TVRO industry. Not as big, nor as strong as it once was, there is indeed some hope that as a group we can turn this thing around. Coop reports in his 'Comments' this issue.

ALSO in this issue, an account of the Westar Technologies Oak Orion replacement chip which unlocks all of the Oak scrambled transmissions, more about building your own cable system and becoming rich. Plus, a continuation of our look at the TVRO industry in the South Pacific, the nightmare faced by Western Union as it fights to stay alive, and an outpouring of news and views which reflects the growing maturity of the home TVRO industry all over the world.

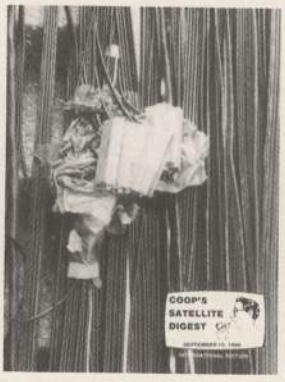
IN OUR center section, more Green Sheet listings where you can buy, sell and trade equipment to get your own cash flow moving once again.

SEPTEMBER 15, 1986

COOP'S COMMENTS ..... page 4
OAK IS BROKEN/ **Can It Be Repaired?** 6



BUILDING YOUR OWN CABLE SYSTEM/*Part Two* 13
TVRO IN THE PACIFIC/ **Part Two** 17
GREEN SHEETS/**Equipment For Sale and Trade**... 20A
WESTERN UNION IS IN TROUBLE/ **Captain Electron** 22
MY VIEW/ **Peter C. Sutro** 27
CORRESPONDENCE 30
TRANSPONDER WATCH 32



OUR COVER/ Finding the 'right line' and selecting the 'best direction to go' was primary goal of those attending Nashville show over Labor Day weekend. Feedlines connecting outside antenna farm to inside displays at building entry. See **Coop's Comments'** this issue for show report.

COOP'S SATELLITE DIGEST

COOP'S SATELLITE DIGEST published on the 15th of each month, dated for the current month, by CSD, Limited, a Turks & Caicos corporation with corporate offices located at Tower Plaza, Providenciales, Turks & Caicos Islands, British West Indies. Under contract, an office is maintained in Fort Lauderdale, Fl. (**P.O. Box 100858, Fort Lauderdale, Fl. 33310; 305/771-0505**) for the contracted purpose of processing all subscriptions, advertising orders, receipt of all mail and correspondence. All communications relative to CSD operations should be directed to this office. CSD, Limited also maintains an equipment testing laboratory for satellite receiving systems and components in the Turks & Caicos Islands. CSD routinely reports on the technical performance of equipment, both privately and in print. CSD also participates in the operation of 'test tube' low power radio and television broadcasting stations and a rural area cable TV system as an ongoing research project into the challenge of bringing modern communication services to third-world, undeveloped regions. **CSD subscription rates** are $60 for 12 issues where U.S. zip codes apply, $65 in US funds in Canada and Mexico and $75 in US funds elsewhere. All non-US copies are sent via AIRmail. CSD has been published each month since October of 1979 and publisher Bob Cooper created the home TVRO industry in 1978. Single copies are $6 in US and $7 elsewhere. Bob Cooper, Jr. is publisher, CSD is copyrighted by CSD, Limited in the Turks and Caicos Islands and USA. **Second Class postage paid** at Ft. Lauderdale, Fl. Application to mail at second class postage rates is pending at Ft. Lauderdale, Fl. Direct dial telephone to CSD, Limited is 809/946-4273 but be warned; this is an expensive telephone call!

STOP-PRESS

Late News At Deadline

NASHVILLE SPACE/STTI trade show had 'official announced attendence just under 10,000' with upbeat attitudes and high praise for exhibition hall portion of event. Details in Coop's Comments.

RCA KU-1,2 satellites can be 'seen' along northern coast of Colombia in South America; tests with C-band quality 7.5 meter dish equipped with 250 degree DX LNB receiver system found NBC channels with between 7 and 8 dB CNR, HBO and Cinemax and other scrambled signals slightly weaker. At KU band, 'real size' or 'gain' of C-band dish unknown.

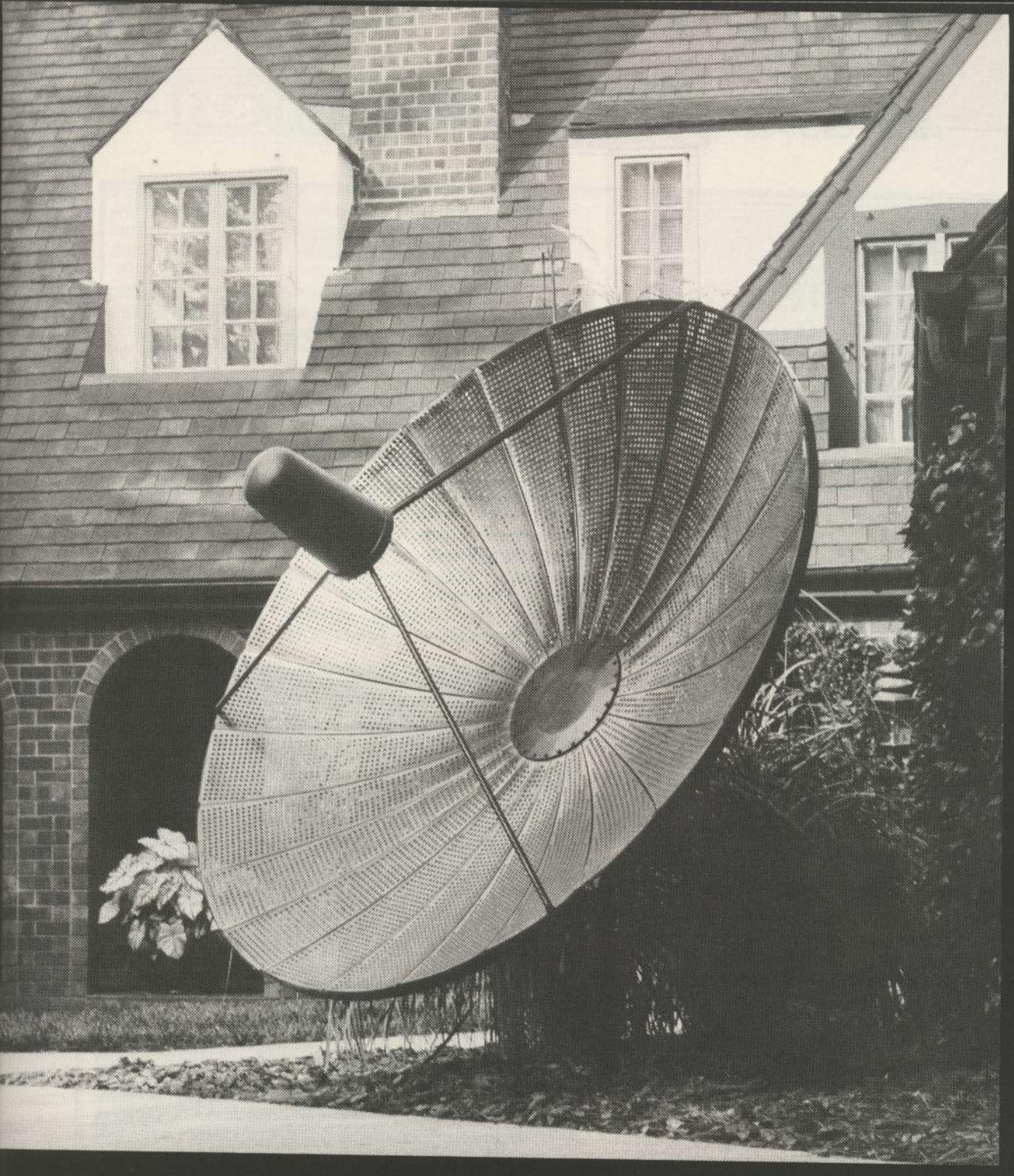
IRANIAN 'incident' involving 'Captain Midnight' type of interference with Iranian national television service September 5th began as 'paper exercise' in well known Washington communications law firm last March. Terrestrial microwave link was breached with videotaped message from young Shah now living in exile promising his return to Iran to lead country again.

SPACE is holding elections to seat new board members 'on rotation' as if business continues as usual at trade association; but 'new board' will be seated and in control only long enough to vote themselves out of business at next March's SPACE/STTI trade show if plans to merge SPACE with DBSA goes through. Under rotation, Bob Behar of HERO Communications would be next SPACE chairman as Paradigm's David Johnson resigned his position in Nashville.

M/A-COM demanding letters from CEOs and key employees of TVRO dealers and distributors in southern Florida, Texas, California as condition that these firms will continue to be able to purchase VC-2000 descramblers. M/A-Com wants firms to acknowledge they realize shipment of descramblers outside of USA is illegal act, perhaps 'An Act of Treason' (!).

VENEZUELA is latest 'instant TVRO marketplace' following lifting of strict government restrictions on dish systems. Dozens of would-be dealers flooding USA seeking equipment, training. Estimates are for 5,000 dish systems there over next 12 months.

TVRO DEALERS surveyed in Nashville by CSD/BORESIGHT told us: 'Descramblers would sell two-three times as briskly if they retailed in $200 region'; '80% of all dish customers still confused by scrambling'; '12.7% of existing dish owners have now or will one day subscribe to HBO/Showtime at present pricing'; 'Disney Channel is most popular service'; Showtime popularity outranks HBO by 2 to 1 margin in dealer minds, and, $16 to $18 per month for basic programming package plus 2 movie services would be sellable package provided one of movie services was Disney. Details in CSD for October and on BORESIGHT.



CLEARVIEW 100

- PERFORMANCE
  Perfect pictures anywhere
- APPEARANCE
  Attractive, black perforated metal
- EASE OF ASSEMBLY
  90 minutes from box to pictures
- LOW COST
  Less expensive than many solid antennas
- TRANSPORTABLE
  U.P.S. shippable anywhere
- DURABLE
  Backed by exclusive 7 year warranty

VPC
VALLEY PRODUCTS
CORPORATION
VALLEY, NEBRASKA 68064
PHONE • (402) 359-5500

- **FCC QUERY/ Too Little Too Late?**
- **NASHVILLE '86/ Last For SPACE?**

-Editorial Comment from Bob Cooper-

NASHVILLE Report

The TVRO industry assembled in Nashville, Tennessee over Labor Day weekend, September 1 to 3. SPACE Chairman **Taylor Howard** told an assembled press entourage a total crowd of approximately 10,000 people attended the show. **Rick Schneringer** later broke that number down by explaining he counts those who attend more than one day as one attendee for each day they attend; those attending all three days counted as '3'. Booth personnel (there were approximately 350 booths and each booth was allowed 4 passes), members of the press and speakers were counted additionally. Outside, often in the rain, slightly more than 100 antennas from 32 inches to 20 feet were in operation feeding the two exhibit halls. These were 'the survivors' in an industry which appeared to be facing extinction as recently as the Dallas trade show this past June.

Unlike any show in recent memory, the mood and attitude of the Nashville show was very much positive and 'upbeat'. We checked with the man in charge of setting up the exhibit hall and booths as the show came to a close. "This was my ninth STTI trade show, and the first I can recall when as we end the show everyone is paid in full". He smiled as we talked, obviously relieved that his firm would not be facing collection problems for the booth preparation and setup. "That tells me one thing; **when we are paid in full** as a show closes, **the people exhibiting at the show had a good show**".

Well, it **was** a good show. And a show filled with 'minor' surprises. SPACE is an example. True to prediction, SPACE wants to close up shop and fold itself into another trade association; The Direct Broadcast Satellite Association or **DBSA**. Taylor Howard, now destined to be the last full term Chairman of the Board for SPACE, primed the pump between an executive committee meeting late in July and the SPACE board meeting at Nashville by mailing out his recommendations for the 'merger' of the two trade associations. **Chuck Hewitt** then went to work telephoning possible 'dissidents' to the merger, hoping to persuade them of the wisdom of melting SPACE down. None of this priming or persuading was really necessary; the SPACE board handled a record number of agenda items in just over two hours and the evaporation of SPACE into a new (yet to be named) trade association with DBSA hardly attracted debate. One effort to amend the bylaws to provide for an interim SPACE board through the hoped-for March (1987) merger-finalization date failed to gain support.

Equipment surprises were few if not necessarily far between. Satellite receivers with built-in (Videocipher) decoders were on display at Houston-Tracker, Chaparral, Echosphere, and Channel Master with promises

ANTENNA FARM was smaller but well attended between rain showers. Yes, mesh antennas typically between 9 and 12 feet were the dominant hardware pieces.

from others. The new receivers are all top-end units with exceptionally sophisticated microprocessor controlled functions. Houston-Tracker hoped to be delivering the first 'integrated receiver descrambler' (IRD) module units by mid-October but all IRD delivery plans will revolve around the ability of M/A-Com to deliver the IRD modules in a timely fashion. Most felt, privately, that only a small, token number of IRD receivers will actually make it to the dealer showrooms this fall and that 1987 will be 'the year' of the IRD receivers. The advantage to the IRD units is potentially price and customer ease. The **detached** VC2000 units have a consumer cost factor in the $400 region. Many of the standard receiver remote control functions are impossible when the VC2000 is in use. These features are expected to return with the IRD versions. As for price, while the IRD modules are going to receiver manufacturers in the $150 range, there is not an automatic $250 deduction for receiver plus descrambler here. That is because the new receivers are the most sophisticated ever offered to TVRO customers and their features demand higher price tags.

SHIRT with a message was one of many noticed at Nashville. Clearly, scrambled services are not attracting wide support in rural America.

CAPTAIN MIDNIGHT, aka John MacDougall **was on hand. His** 'story' **is scheduled to appear in** ORBIT **in their November issue. John sold the satellite guide exclusive rights to his reflections on being Captain Midnight for $1,750, signed autographs at the SPACE Dealer Rally and sold T Shirts and caps in effort to payoff his $5,000 FCC fine, and legal bills.**

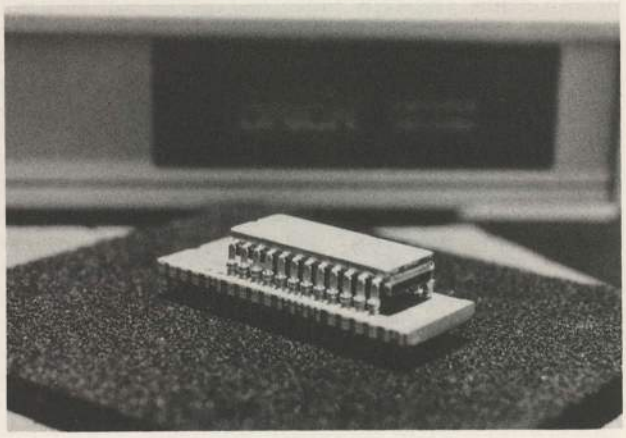
Signs. Booth display signs identifying Janeil, Remington Rand Corp., Toner Cable Equipment, Anixter Brothers, and Zenith turned many heads. Remington-Rand had acquired Kelgo Distributing while Toner and Anixter, established and formidable firms in the cable hardware business were on hand to push Videocipher descramblers as well as test the waters for TVRO hardware. Zenith has been in the TVRO home system business the better part of a year but their formal entry as an active player/exhibitor signaled their interest in being an industry top supplier. A spokesman described their TVRO interest as 'long term, for the long haul' and 'conservative'. The Zenith strength is their network of established TV and electronic retail dealers which in turn suggests they would be bringing many 'new dealers' into this industry within the coming year.

Other signs. We were surprised to see only token equipment 'dumping' signs at display booths. Distributors we talked with estimated how much longer it might take to flush the balance of the depressed-price-hardware out of the system. The consensus was 3 to 5 months, a function of the strength of the market this fall. At Nashville, hand written signs offering equipment at fire sale pricing were notable for their absence. **Still other signs.** Cash sales did an upturn. Most booths are not designed for the direct delivery of merchandise on the spot. Those that were report a perhaps surprising resumption of cash purchases in Nashville. The use of credit cards, even company or personal checks was down from recent prior shows.

Negatives? Surprisingly few. The weather did not cooperate but it would be difficult to assess 'blame' for that one. Show 'security' established new standards for being excellent. There is talk that the Atlanta based security company may be employed for the scheduled March Las Vegas show as well; a 'reward' for being 'tough'. The show apparently lost a minimal amount of

COOP/ Continues page 35

OAK ORION BROKEN/ WHO'S NEXT?



THE DEFEATER

When Oak Orion was first introduced nearly six years ago, it was the 'ultimate' scrambling system for video and audio. Oak proudly ran trade publication advertisements which proclaimed that 'if your business demands privacy, Orion can provide it'. Indeed, for the better part of six years if you said 'satellite scrambling' you were also saying 'Oak Orion' in the same breath.

Alas, no more. For all practical purposes, the Orion system has not only been broken but it quite possibly cannot be effectively re-configured by its operators to ever again provide a high measure of security. A Canadian firm, Westar Technologies, did the major work in this area and rightfully (or wrongfully) 'credit' for the 'breakthrough' must go to **John Davidson** of Westar.

Technical basics first. Oak's video is inverted and the sync is processed. To unscramble the video, you need to reinvert the video polarity and reprocess the sync. Quite by accident one stock TVRO receiver (from Arunta in Phoenix, Arizona) does that. Arunta's **Ed Grotsky** set out to design a TVRO receiver for the home three years ago which he considered 'the ultimate receiver. One of his design criteria was stable picture lock (sync) even when the picture was degraded by noise. To Grotsky, a satellite video receiver needed to be capable of producing stable if not noise free signals even in week signal areas. To obtain these results, Grotsky strips the original satellite uplink sync information from the transmission and recreates new sync signals within the receiver. This follows a design experiment reported in **CSD** in 1980 and after by England's Steve Birkill.

The Arunta receiver unlocked the video of Oak Orion without the intent to do so. Others have designed (and a few have sold) 'video only descramblers' for Oak from about the same point in time. But the audio seemed hopelessly locked away. The audio was 'secure' because it was not sent on a sub-carrier; rather it was converted from analog audio to digital audio and then sent intermixed with the video information. To extract the audio from Orion one first needed to find the in-video-hidden audio digital data stream. Then the designer had to extract and process that digital audio stream so that it would come back out (to the system) as analog audio. The primary original challenge, according to Davidson, was to simply understand how the system was configured.

Oak processes their audio system and their video inversion and sync suppression with instructions from a Mostek chip device. The Mostek is a memory chip with instructions. If you could **reprogram** the Mostek chip with new instructions, it would decode the audio and video **on command**. A smart designer would command the chip to decode all Oak Orion encoded signals all of the time. Oak originally did not intend for that to happen; they built in a series of addressing commands which, like Videocipher, are transmitted via satellite. Each Oak decoder has its own address or unique electronic address system. For the Mostek chip to decode 'on command', the decoder has to receive instructions from the uplink. That uplink signal is a data stream which performs an on and off command for Orion. Again, a smart chip programmer would rewrite the instructions to the chip and have it turn on without the receipt of the unit's specific address. It is a little bit like sending out 'third class mail' addressed to 'occupant' or first class mail addressed to a single recipient. In this case, Oak wanted everyone to be at the receiving end of 'first class mail' but with the correct rewritten program in the chip all users of the chip became 'occupant or current resident' mail recipients.

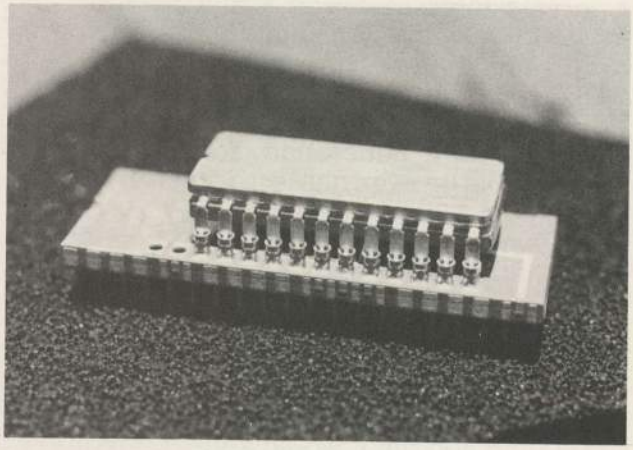
Westar first produced 'clone chips' to replace **U22** in the Orion last spring. They forwarded a small number of sample chips around to test sites in the United States and waited for field reports. The reports were favorable. But Davidson felt he

had a number of potential 'legal problems' since the chips outwardly defeated a secure scrambling system. Under Canadian law which Davidson's attorney recites for you, **Westar cannot sell chips in Canada**. That's because the Canadian Cancom system utilizes Oak to encrypt 8 or 9 separate channels on Anik D. Those channels are 'sold' to both cable systems and individual dish owners in Canada. These 'secure', scrambled transmissions are protected by Canadian law; the equivalent to old-section 605/new section 705 law in the United States. Davidson, self admitted to be more of an engineer than a marketing/sales person, chalked his work up to a 'private hobby challenge' and tried to file it all away. But there were a dozen or so of the initial clone chips out there floating around the US. At least a few of these fell into hands that would reassess the marketing aspect of the project.

Shaun Kenny of **Boresight** first publicized the existence of the chip in early May. There was not much reaction, adverse or otherwise. Shaun waited a few weeks and reported on the chips a second time. Now there was a measurable if not door-banging-down reaction. Several viewers of Boresight wanted to know more; some even wanted chips. This information eventually got back to Davidson who by now was wrapped up in cracking Videocipher.

"There are many basic similarities between the Orion system and some key parts in Videocipher" mused Davidson. Oak will be delighted to hear that; they have lodged patent-infringement lawsuits against M/A-Com reciting the same basic premise. **"Once you understood the Orion descrambling technology, you had a big head start on untangling Videocipher"** he continues. Davidson had another practical interest as well; his small firm was actually bidding for a number of scrambling/descrambling package contracts. One, involving 20,000 terminal systems, was nearing the final vendor selection stage. Davidson instinctively knew that if his firm was associated with the 'Orion clone chip' he would probably not receive any legitimate contracts to design, build and deliver new format scrambling systems. He needed those contracts to keep his business alive.

Kenny and others, including the **CSD** produced SCRAMBLE-FAX newsletter, reported on Westar's chip. Unfortunately, there are two firms in the Toronto area which have the name 'Westar' and the street address and the telephone number of the 'wrong Westar' ended up being publicized. Thousands of telephone calls were coming into the 'wrong Westar' in Toronto and they very clearly did not appreciate it. Davidson's Westar, much harder to find and not nearly as visible,



THIS IS the Westar 40 pin carrier chip which replaces U22 in the Oak Orion P descrambler. Westar can be contacted at Suite 100, 2 Bloor Street West, Toronto, Ontario, Canada M4W 3E2. Their telephone number is 416/968-3602. **Pricing is quantity conscious but between you and Westar.**

gained an extra 60 days or so while the telephone number/address snafu was straightened out. Ultimately, Davidson would work out a business arrangement with the 'wrong Westar' so they were compensated in return for forwarding those thousands of calls and callers on to the correct 'Westar'.

All of this came to a head in early August. Davidson was now personally watching his business telephone ring off the wall and he saw proof of the interest in his clone chip. He was also much closer to securing the much wanted private scrambling system contract (it should be in effect as this is read in mid-September). Davidson decided to come out in the open and he instructed his people to 'admit we build the clone chip and sell as many as we can'. **But not in Canada.**

From the limited perspective of Westar and Davidson, as long as the chips were not sold in Canada, the firm's attorney felt confident there was no legal jeopardy. They were selling chips into the US (and elsewhere, such as the Caribbean) and since the chips were being produced in Canada, he felt the US authorities could not touch him either. Plus, as a practical matter, Westar had very little real interest in selling chips anyhow. Davidson knew he was on thin ice with the whole project; perhaps in the back of his mind he felt the publicity from his successful defeat of the Oak Orion chip would help him land new, private scrambling system design contracts.

There is some logic to this; who is better to design a more-pirate-proof scrambling system than a man who was himself being dubbed 'The King of the descrambling pirate system desig-

ners'? Davidson's work on defeating Videocipher (going on at increased tempo as you read this) is now more than a challenge; if he can defeat Videocipher, **and understand why** it could be defeated, he could put those talents to work to design a 'third generation' scrambling system which would be even harder to break. By the 'next generation' John Davidson. Indeed, this was 'John Davidson's turn in the magic circle' and with all of this attention focused on he and his firm's abilities, he was going to make the most of the opportunity.

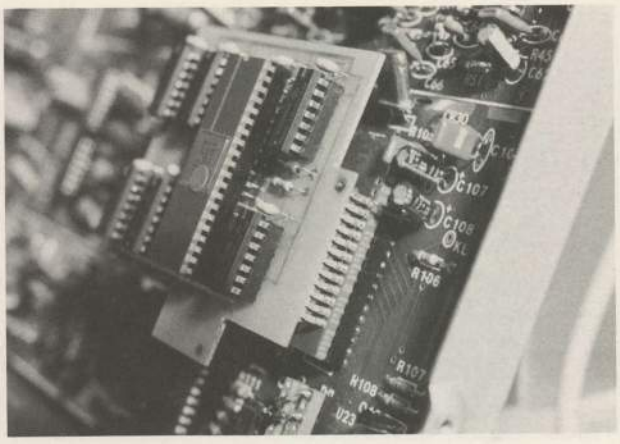
But what is the legal posture of selling the Westar clone chip in say the US of A? Is that legal? **Probably not**. The last legal verdict is not yet in but on the surface it would appear **anyone** who advertises, promotes, builds, distributes or installs any kind of gadget which defeats **any** satellite scrambling system has crossed over the line. Davidson may, for now, be safe by 'hiding in Canada' with his manufacturing facility. But when the clone chips cross the border into the United States, they are subject to US laws; not Canadian laws. Davidson's attorneys believe that as long as they are only manufactured in Canada, and not sold there, Westar can sustain charges and win.

For many years the US and Canadian authorities have not been very cooperative on matters related to satellites. There is a 16 year unresolved battle that dates back to Anik 1, for example, which involves the use of Canadian satellite video signals inside of the USA. Under that US-forced agreement signed very reluctantly by the Canadians, it is OK under certain circumstances for US satellite signals to be viewed and used in Canada, but under virtually no circumstances is it legal for Canadian services to be used in the USA. Davidson and his attorneys do not expect Canadian authorities to cave in and agree to prosecute Westar for the manufacture of Orion clone chips being exported into the USA.

Frankly, **they could shut down Davidson tomorrow** and **it would not have any effect on the security of Oak**. Why is that?

Once a talented software programmer has his hands on a single, functional, Westar chip, he can duplicate the chip. **CSD** located one such operator in Louisiana who claimed he was duplicating the Westar chip at the rate of one every 17 seconds. He did 100 as a pilot run and each of those 100 could in turn fall into the hands of other duplicators who could in turn produce another one just like it every 17 seconds. It is the original self-dividing amoeba story in electronics. Davidson's Westar may end up being the victim of 'pirates' who once they own a Westar chip start cranking out the new chips on their own.

But there is a bigger 'marketing challenge' for the ultimate success or failure, in the marketplace, of the Westar Oak clone chip. And that is the apparent 'shortage' of Oak Orion P decoders in the real world. In midsummer, Canadian sources were reporting a shortage of P descramblers. Cancom, the retailer of the P series units, was being blamed for 'warehousing' of the P units. Davidson and others contacted by **CSD** reported there were 'warehouses bursting at the seams with P units' but as of mid-August locating P units was still tricky. We expect that problem to be resolved by the time you read this in print.



IN OUR special unit (strangely enough, loaned to us by Oak nearly two years ago), **U21 was mounted on a special subboard above the balance of the chassis. We had to** 'space upwards' **for U21 to make enough room for the Westar U22 replacement chip. You won't have any of this to mess with; standard P units have U21 mounted at board level with the rest of the chips.**

Marketing of clone chips, whether they come from Westar, a firm in Louisiana, or any number of other firms or individuals who have invested $1,500 in the necessary chip duplicating equipment to go into clone-cloning business, will ultimately turn totally on the number of P units in the hands of consumers. Nobody but Oak knows how many have been manufactured to date; the number is not significant in a universe of 1.7M North American TVRO dish owners.

Some marketing types see the availability of the Oak-clone chip as a temporary tool to be used in the scrambling wars with US programmers and networks. How might that work?

1) Anyone within viewing range of the Anik D transmissions could be equipped with an Oak Orion P descrambler (which is connected to your TVRO receiver by taking unfiltered or filtered, unclamped video out of the receiver).
2) With a Westar-clone chip inserted in place of U22, the original chip from Oak, everything on Anik D is suddenly 'in the clear'.
3) That includes the full time network services of **ABC** (Detroit's WXYZ, on TR10), **CBS** (Detroit's WJBK on TR23), **NBC** (Detroit's WDIV on TR9),

PBS (Detroit's WTVS on TR21), plus, Canadian stations **CHCH** (Hamilton, Ontario; TR8), **TCTV** (French from a pair of Quebec stations; TR14); **CITV** (Edmonton, Alberta; TR18), **CHAN/BCTV** (Vancouver, BC; TR22) and most recently **TSN** (the Sports Network; TR2).

That is a total of 9 services, including all of the US networks, three 'independent Canadian super stations', a French language network and the Canadian 'clone' of ESPN, TSN.

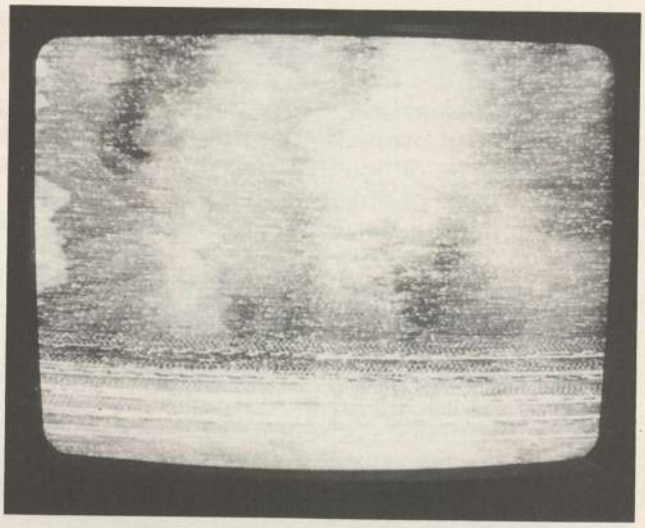
4) For this 'menu of services' a TVRO consumer would shell out someplace between $203 (US) and $400 US for the P descrambler, and between $75 and $250 for the Oak-clone chip. The investment per consumer, to be free of worrying about losing his or her network signals, super station signals and sports service signal would be between $278 and $650.

But isn't that all quite illegal? Again, probably. But perhaps not for the reasons you would first believe.

Oak Industries has customers other than those in Canada. There are nearly two dozen other network users of Oak Orion, on the US satellites. They cover a wide range of users, from more than a half dozen horse racing services (feeding betting parlors in Las Vegas and elsewhere), religious groups (Baptist and Catholic), educational networks (Hospital Satellite Network) and of course those occasional professional boxing and wrestling bouts distributed via satellite. There are also numerous private teleconferences from firms such as Chrysler which utilize the Oak scrambling system. This greatly complicates the legality question since the same 'wide-open', turned on, Oak Orion P units that descramble the Anik D 'entertainment channels' also decode the US satellite transmissions for these private networks. Now, if an Oak-clone chip plus a 'P' series decoder does this, is it not therefore illegal to engage in commerce for the descramblers and clone chips? Logic says yes. Oak, so far, has been quiet about this development.

"My advice is that if you end up dealing in Oak Orion P decoders and clone chips, you never demonstrate in public nor provide in public a P unit with the clone chip installed." Speaking as a would-be marketeer of the packages. "I tell dealers to buy the P decoders, and the clone chip; take the **pair** of devices into the consumer's home and give the consumer instructions on how the P unit hooks up and the clone chip installs. **Then let the consumer do it** him or herself". That sounds nice in theory but is that really going to keep the TVRO dealer from legal difficulties with sections 605 and 705?

"Probably not" suggests a communications attorney. "The law makes a person liable even if



CANADIAN ANIK-D transmission of TCTV (TR14) **was only one we could decrypt from offshore Caribbean location using 16 foot Paraclipse dish and DX 800 series receiver. In this case, carrier to noise ratio was at 5 dB and audio was 'gritty'** (see text).

they merely provide information on defeating the system or instructions to defeat the system. On the other hand, if the dealer knows his customer and the customer is not merely a 'plant' gathering evidence for a precedent setting lawsuit in this area, it may be difficult to stop this sort of sales practice inside of private homes."

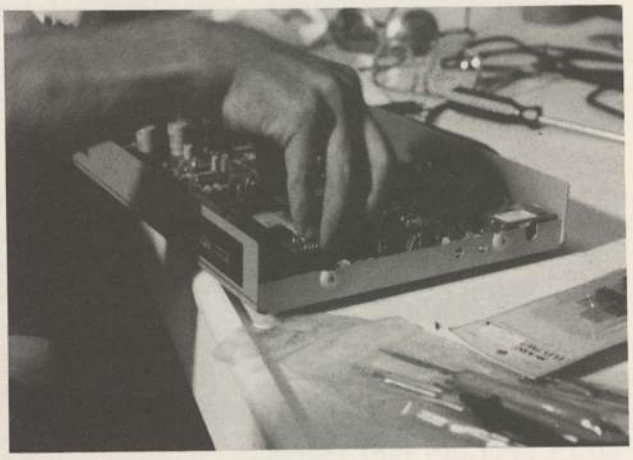
As a practical matter, there are probably very few US TVRO consumers who have any interest whatsoever in the Hospital Satellite Network or other US services scrambling with Oak. There is not much there, except perhaps the occasional boxing or wrestling match scrambled for theatre big screen TV showing, to attract US consumers to watch the services scrambled on US satellites with the Oak system. **"It may be a non-problem, problem if nobody watches these Oak-secured transmissions anyhow"** suggests our attorney of record.

Davidson reports he has been warned, indirectly, that if he persists in marketing the Oak clone chips, **in any sizeable quantity**, that Oak will 'change the codes'. Davidson says he is prepared, in advance for that, but doubts Oak could or would go to that much trouble anyhow.

"It would cost them a great deal of money to make those changes" he starts off. "And they know that with the understanding people now have of the software, it would be possible to rewrite the clone chips again to accommodate any changes they can make in the system. All they do when they change codes is create a retrofit market which will be resold with new codes by the people selling chips like ours. There is no effective way to stop this, now."

As we shall see, Davidson went a step further than Oak with his clone chip and he has the 'memory capacity' to write in additional instructions.

Interest therefore is focusing on how this clone-chip package might impact on the much larger, and much more volatile US market which Videocipher has ripped asunder. With the US buyers balking at spending $395 for a Videocipher and upwards of $20 per month just for the handful of presently scrambled services, might not the availability of the Oak P plus clone chip give back to TVRO dealers a 'tool' to restart home system sales? "I think if nothing else, it demonstrates that a previously secure scrambling system can be beaten, and that will cause some people to believe that ultimately the Videocipher system will also be broken. It will, at best, set back the eventual acceptance of the scrambling program" suggests USS/Maspro's Doug Dehnert. He, for one, is sorry that the Oak system was broken. Dehnert believes that as long as the marketplace remains 'unsettled', as long as scrambling dangles with an uncertain future, there will never be a stable marketplace. Others disagree.



SOCKET. For reasons best understood by Oak, roughly 50% of all U22 devices are installed on circuit boards without sockets **in the U22 position. It is highly advisable to remove the Oak supplied U22 device, carefully, and add a socket if one is missing before inserting the Westar chip in its place. If you have never removed and reinstalled a 40 pin device before, find somebody who has; you can easily ruin the board and the chip without some experience and the proper tools!**

"Scrambling may be upsetting the marketplace but the real problem is that there is only one source for descramblers (M/A-Com, now GI) **and the programming is controlled by people who don't want to see home dishes proliferate"** responds Boresight's Kenny. "When we have a sure program product for our customers to use, at pricing which does not penalize the home dish viewer, then and only then will TVRO come back strong".

CSD not only talked at length with Westar's Davidson, we also took a pair of his Oak-clone-chips and tested them. Our Oak Orion descrambler turned out to be a hybrid, perhaps one of a kind. Oak migrated from their original industrial or 'I' version descramblers to the present personal or 'P' series. In between there were apparently

some prototypes; at least one (because we have it). As the photos here show, our Oak unit has a sub-board above the master board and on that sub-board is IC U21. Supporting that IC we found a quantity of additional 14 pin devices. The chip to be changed, U22, sat **under** the sub-board so we had to create a 'socket expander' using some 40 pin sockets to raise the connection from the master board to the bottom of U21. That gave us the room we required to substitute John Davidson's device for U22. We mention this in detail only because readers will see our photos and exclaim "**That** is not the way **my** Orion P unit looks!" Not to worry; your Orion P will have three chips in a row (U20, U21, U22). You take out U22 and carefully insert the Westar replacement. You should not handle the replacement chip carelessly; it can be damaged by static electricity, rayon clothing, or bending of the pins.

These tests were performed outside of the United States and outside of Canada. We violated no law, no regulations, no rules, no government decree with our tests. We report on them here as a matter of technical interest and not as an encouragement that you should do the same where different laws and regulations might apply.

We were using a 16 foot (Paraclipse) dish, an LNA that purported to be 80 degrees, a Chaparral feed, and a DX 800 series receiver. We fed unclamped video to the Orion P but could find no real difference between the filtered and unfiltered video. Remember, the audio in the Orion transmissions is not carried on a sub-carrier; it is 'locked up' in the video data stream.

At turn-on, on Spacenet 1, we found virtually instant descrambling of the Hospital Satellite Network (TR11) and the Baptist Television Network (TR21). The video required typically two seconds from accessing to being in the clear and there is a small, intermediate 'jump step' between obviously fully scrambled and partially descrambled. The audio follows the video in another one to two seconds. Video quality was excellent and the audio was clean and distortion free. The CNR was in the 10 to 11 dB region on both signals.

Next we trotted through some similar services (ie. Oak encrypted) on Westar 4 and 5, found a special telecast being done between Chrysler and their dealers (Oak encoded) and ended up on Anik-D where Cancom has so many signals scrambled.

As old-time readers are aware, last fall we had a direct hit from Hurricane Kate and we lost more than 20 dishes in one storm. Although we have some of those replaced, we do not presently have an operating 20 footer that can be run across the sky. So here we were well out into the Caribbean trying to pull in Anik D on a 16 foot dish. The best of

HOSPITAL SATELLITE Network as descrambled from TR11 of Spacenet 1 with Westar chip installed in our Oak Orion descrambler.

the unscrambled signals runs in the 5 dB CNR region. Would the Oak descrambler decrypt signals this weak?

We found only one of the Anik-D signals which would provide enough signal to decrypt; TCTV on transponder 14. The video was in the 30 dB SNR region after decryption and the CNR was at or below 5 dB. The video was watchable, in color, even with this weak input level. The audio was decoded but not enjoyable.

When a digital signal is transmitted, you lose the ability with an audio signal to play electronic games; such as narrowing up the passband of the audio detector IF to improve the signal to noise ratio. The result is that you lose some of the digital data to noise; whole portions of the digital data stream are simply gone, replaced by noise. The Oak descrambler reacts to missing data by giving you 'pops'; program audio in/program audio out. So you have a small amount of audio, some noise and then a pop and silence followed by more audio, noise, a pop, silence again. This is not useful audio and while it has nothing whatsoever to do with either the Oak descrambler or the Westar chip, potential users of any system with digital data (including the Videocipher system) should be warned in advance; if you do not have at least threshold carrier to noise ratio (typically 7 to 8 dB) your audio will suffer badly.

By being very patient and waiting for a long time, we could see the start of decoding on other Anik D services; such as CHAN/BCTV on transponder 22. The 'lock up time' for TCTV, a signal which we judge to be at just about the bottom of the scale for minimal descrambling, was longer than we experience with the US signals on Spacenet and the Westar birds; typically 10 to 20 seconds. So

there is another function to be concerned about if your dish is too small for your particular location; in addition to poor audio, you will have slow reaction time to the scrambled signal.

We had two separate Westar chips; both performed in virtually the same manner. We could find no measurable difference in response time nor sensitivity using the TCTV transponder on Anik-D. That's good for Westar; they seem to have good quality control (we obtained both chips from a 'distributor' and Westar did not know we had them until we had completed our first tests).

From the first handful of chips created by Davidson for Westar to the present series, there have been two varieties. The first chips distributed had a bluish colored top. The next chips shipped (and those currently available) have a polished silver top. The original blue-topped devices have a single 'page' of memory or instruction information. This is basically what Oak provides in their own 'addressable' chip which comes in the U22 socket. However, the newer and sliver topped chips have two separate pages of memory or instructions internally. As you receive the chips you have **two separate but identical** 'pages' of memory. Davidson explains that in this way.

"For right now, we simply speed up the access or turn on time by having two pages rather than one processing and approving the signals. However, down the road it may be useful to have different information on both pages". Why different information?

There is a threat, to Davidson, that 'If you are very successful in distributing these chips, we (Oak/Cancom) will go in and rewrite instructions for the turn-on of every unit out there, rendering your present chips useless.' Davidson feels that with two pages of data to work with, he can handle any additional instructions that might be needed. And Cancom knows that.

Davidson, to us, appeared to be a very cool person with extraordinary reasoning powers. He simply wanted his 'product' to be ready, for anything that might happen. We asked him if the extra page had any real use at the present time.

"Oh yes, it could be programmed to tell the Oak Orion descrambler to descramble the Videocipher **video**, for example". Ohhh. But just the video? "Yes, we like many others are working on the audio and if, and when, it is broken, I doubt we will be able to get both sets of instructions onto that single chip."

Early on in this report we mentioned that we did locate one firm in Louisiana which had already run a 'token test run' of 100 clone-of-clone chips, using a Westar device as a start. This illustrates the fact that once the 'technology' is released, there is no controlling its widespread distribution.

CHRYSLER private teleconference was 'up' the day we ran our initial tests. There ARE distinct legal problems if users are found tuning in US services scrambled by Oak; the law is not yet refined with respect to tuning in foreign (Canadian) transmissions with the P descrambler and Westar chip.

The same fact must be applied to the Oak Orion P as well.

Oak, presently, is the sole source for the P series descramblers; and well they might be since they created it and until very recently were the only people who understood it. No more. With the 'software breakthrough' by Davidson, and his 'educating' of others that followed, there are now numerous people and firms out there working on the complete Oak Orion system as well. An example.

In researching this report, we found an engineer somewhere in the Dakotas (we promised not to give out his name) who is leading a group of investors to Taiwan where a Taiwanese firm is preparing to build an initial pilot run of 1,000 Oak-P clones, equipped with their own chip-clones of the Westar rewritten chip. In an initial lot of 1,000 units, equipped with the permanently-on chips, these boxes will land in North America for around $125 each. They will then go into some sort of distribution network with a user price tag suggested in the $400 region. Remember, that's for permanent-on authorization for the full set of Oak Orion scrambled signals. This is a 'plan' at present; **when** it happens, **then we believe it** (this business being filled with more than the usual amount of hype). However it illustrates the primary concern regarding the Oak Orion scrambling at the present time; that being, that as exciting as the Westar chip may be, the marketplace for it outside of Canada is severely limited by the very limited availability of the Orion P descrambling units in the USA. You cannot simply call up

Echosphere and have one sent to you.

All of this may take some time; in the interim, we found at least two US citizens who claim (independent of one another) that they travel into Canada to bring back P unit descramblers in lots of 25 (one case) and 100 (the second case). Those seem to disappear quickly when brought in with long waiting lists of would be customers who are ready to pay upwards to $300 for such a unit. (Oak may be missing a bet here; they have had difficult times of late and they may be sitting on a 'gold mine' that could bail them out of some of their present financial problems. They are likely to be severely criticized if they continue to block the flow of P units into the states, which will only lead to people going to Taiwan to get them duplicated. **Then** they will have a **real problem** with cash flow!).

Most of this is happening 'underground', behind closed doors (*). Oak will not care for this report; some people at M/A-Com and GI will see it as upsetting to their businesses as well. We could have ignored the entire subject but if we did so, that would not have changed the fact that it is happening. Or the final result of it happening, whatever that may ultimately turn out to be.

The Oak Orion encryption system is broken. Nothing will change that and now that the first clone chips are in the hands of people who can copy new chips every 17 seconds, nothing Oak or others might do towards John Davidson and his Westar firm will correct what has happened. And that is the bottom line.

*/ PLEASE do **not** call **CSD** for the names or telephone numbers of people in the United States who are presently selling Oak Orion P units. As far as we are concerned at press time, **none** of the sources we are aware of are reliable, totally dependable sources. You may update yourself on sources by calling our SCRAMBLE-FAX Hotline at 305/771-0575 every week or so to see if new sources have met our more lenient requirements for being listed there.

GET RICH/QUICK: BUILD YOUR OWN CABLE SYSTEM (Part 2)

As noted, there are finite limits on how many amplifiers can be placed 'in cascade' and how much cable, therefore, can be stretched out from the headend to some distant point. There are a few basic rules here which we will give you now but which we will look at in more depth at another time:

1) Cable loss or attenuation is frequency sensitive, as most already realize. Just as you can run a longer cable line between dish and indoor electronics when you downconvert at the dish to a **70 MHz** IF than when you downconvert at the dish to a block IF in say the **900/1400** (or even 400/900) MHz range, so too do **higher cable frequencies** weaken **faster** than lower cable frequencies.

This simply means that if you operate your cable system with one or just a handfull of channels, you would place those channels at the lowest possible frequency spot available; typically channel 2 (then 3, then 4, etc.). Lower frequencies (channels) go further in cable with less attenuation (loss).

2) Cable amplifiers have certain design criteria. They are built to operate best when they receive a certain (specified) input signal level and they work best when they operate at or below a certain (specified) output signal level. This affects where the amplifiers are located along the cable system plant. If the amplifier manufacturer suggests that the input to the amplifier be +7 dBmV, then you would be foolish to try to put it where the signal level is +1 dBmV. In this example, the amplifier would still work (after a fashion) but the pictures coming out of the amplifier (having been amplified) would be noisy or grainy. And every TV set plugged into the cable **after that point** would have degraded pictures.

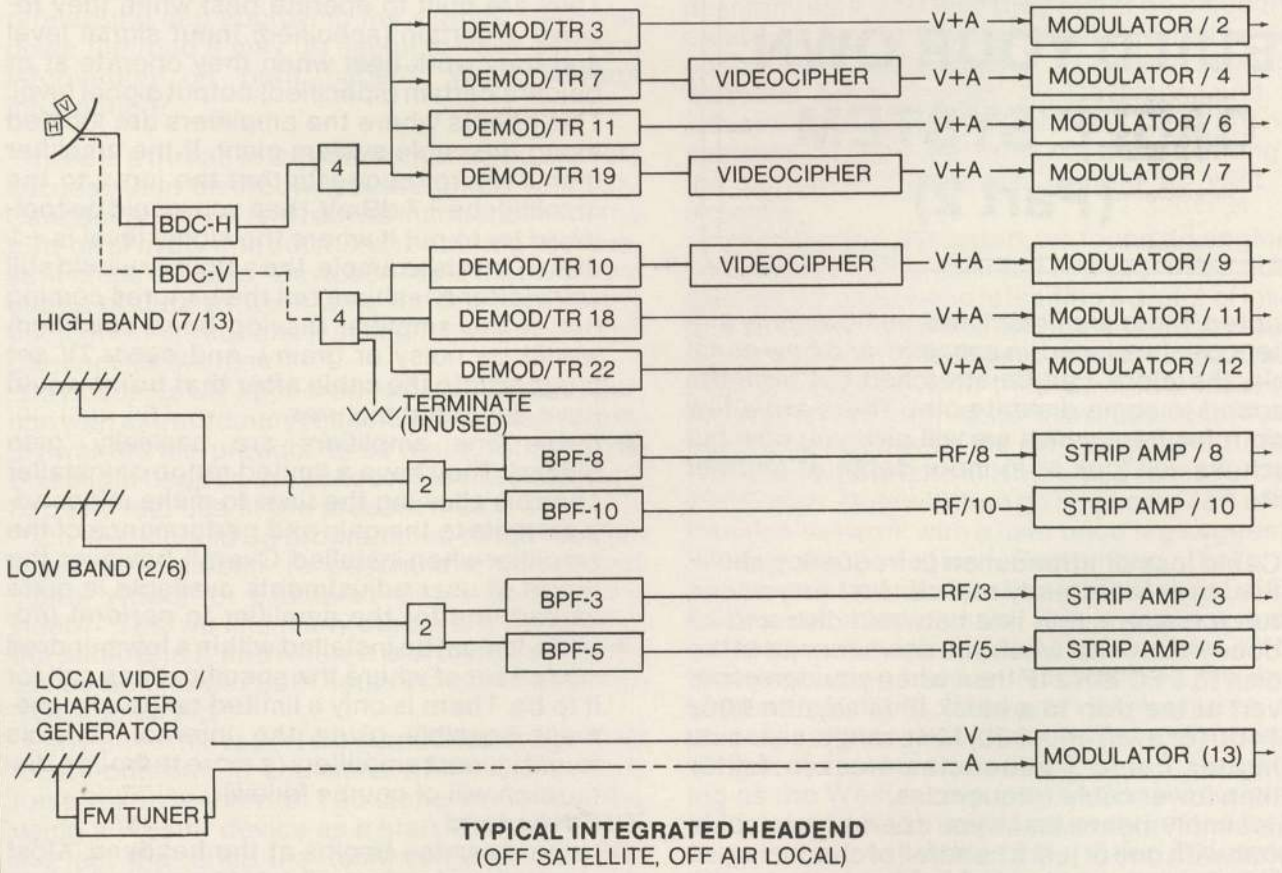
3) Cable line amplifiers are basically 'gain blocks'. They have a limited range of installer controls allowing the user to make minor adjustments to the gain and performance of the amplifier when installed. Overall, however, the range of user adjustments available is quite limited and for the amplifier to perform properly, it must be installed within a few hundred cable-feet of where the specifications call for it to be. There is only a limited range of movement possible given the internal controls found in most amplifiers (a more thorough discussion will of course follow).

THE Headend

All signal service begins at the headend. Most **domestic** headends must create a cable mixture

of signal sources; off-satellite, off-air (local VHF and/or UHF) and perhaps local (meaning purely on cable) originated channels or services. Each cable TV channel has its own signal preparing or processing equipment. The type of equipment varies with the type of program source.

1) **Off-satellite:** The baseband video and audio is processed from its FM (frequency modulation) satellite format to an AM (amplitude modulated) format with a VHF channel modulator. The cable modulator is only slightly different than a home dish modulator. It has greater output signal level capabilities, probably separate controls over the audio and video carrier levels, and modulation controls for each. There may also be some metering to monitor output levels and/or modulation levels.
2) **Off-air:** VHF TV channels are normally processed 'on channel', and what is locally available on channel 2 (for example) becomes cable available on channel 2. There are some situations, which we will discuss, where it is necessary to shift the local off-air channel to a new channel for cable carriage. This is usually confined to regions very close to the actual (VHF) TV transmitters to prevent interference between the cable delivered signal and the 'direct pick-up' of the local VHF signal. You can process VHF signals with either single channel 'strip amplifiers' or with heterodyne processors. Strip amps are cheaper but they may cause problems with adjacent channels (ie. strip amp for channel 3 may cause on-cable interference with channels 2 and 4). The solution to this is to use a heterodyne processor **or** to install a **bandpass filter** ahead of and/or after the strip amp to insure that it does not 'bleed' into adjacent channels on one or both sides. UHF off-air signals must be downconverted in frequency to a VHF cable channel. This is done with a crystal controlled converter which receives an input channel (such as 20) and reproduces the same TV channel on a common VHF channel (such as 10). Some channel combinations are 'not possible'; ie. there are certain UHF channels which cannot be converted to certain VHF channels, so some advance planning is required before selecting your final on-cable channel line-up.
3) **Local services:** The NOAA 'Weather Wire', UPI Cable News wire and other services are available and there are weather sensing instruments which allow the cable operator to insert visual weather report information onto a spare



TYPICAL INTEGRATED HEADEND
(OFF SATELLITE, OFF AIR LOCAL)

cable channel. Some cable firms marry this sort of alpha-numeric video information service to a background music service, providing a combination 'bulletin board with sound' which allows local announcements and information. All of this is done with outboard character generating equipment, either 'standing alone' or wire-tied to either weather sensing instruments or to a professional wire service. Ultimately, all of this 'data' ends up modulating a standard cable modulator so that it appears on the screen in a format which the viewer finds useful and informative. Local videotapes, local (live) studio programs and other non-broadcast services get on the cable in the same manner; through the outboard equipment and finally directly to a cable modulator that places the audio and video signals onto a TV channel on the cable.

In illustration form here, we show a 12 (VHF) channel headend system. Channels 3, 5, 8 and 10 are off-air local VHF signals. They are processed from off-air antennas through signal splitters (3 plus 5, 8 plus 10) to single channel bandpass filters. The bandpass filters then connect to single channel 'strip amplifiers' which amplify and filter the individual local signals.

Channel 2, 4, 6, 7, 9, 11 and 12 are satellite signals processed first from a BDC downconverter on either the vertical or horizontal ports on a dual-mode fed dish. Then each of the individual satellite channels (3, 7, 11, 19 on one pole; 10, 18 and 22 on the opposite pole) is split off and processed from the block downconverter IF through to baseband video and audio. We show the installation of three descrambler units (satellite channels 7, 10 and 19) as a recognition that some baseband signals are not useable as they come out of the receiver and require additional processing with descrambler equipment. Finally the totally processed video and audio is sent to individual cable modulators for the 7 respective satellite delivered channels.

Finally, channel 13. It is a local origination channel, tied to some sort of character generator (video) and through an FM tuner to a local (FM) radio station source which becomes the audio portion of channel 13.

As you can see, the channel line-up is totally at the discretion of the cable operator although economics may dictate that local off-air channels are left intact on their original channels for cable carriage. Most cable companies operating in the USA have created a form of service known as **'basic'.** That means that for the lowest dollar subscription rate per month, all subscribers receive the so-called **basic channels.** The normal practice is to load up the 'basic channels with **(1)** local off-air signals, **(2)** a small mixture of off-satellite signals which cost the cable operator not very much (or nothing at all), and **(3)** locally originated 'access' or character generated channels. The concept here is to not give away any of the 'big ticket' services such as HBO. Many cable operators even move WTBS, or WGN, CNN and ESPN to some level higher than basic. The Weather Channel usually ends up on basic however.

After basic there are various approaches to 'tiering' cable programming. Here opinions vary within cable how best to 'market' services beyond basic.

1) In some instances, basic may consist of between 20 and 30 channels (in which case WTBS, CNN, ESPN, CBN et all **are included**) but the charge for basic is quite high; in the $9 to $15 per month region. Then everything not on basic is available either 'ala-carte' (one channel at a time with a per-charge per-channel) or as part of a premium package (two to five channels grouped together for fees such as $9.95 per month for multiple-pay packages).

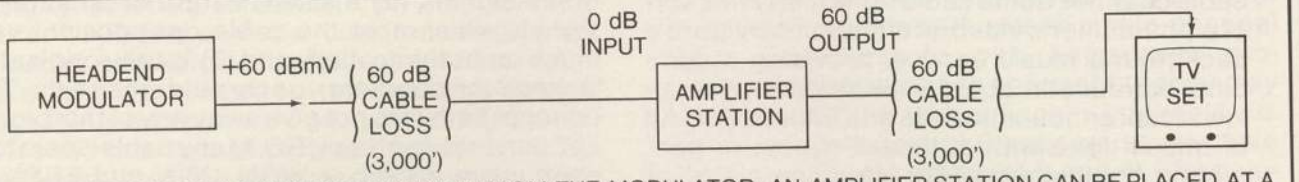
2) Or, basic is 'very basic' and everything else costs extra. The extras can be sold one by one or as part of a group.

The important point here is that each cable operator has his own approach and he hopes it is the best approach for his community. **He wants to maximize the cash flow**, which means he first wants to get the lowest cost basic package into as many homes as possible. Once he has the basic service into the home, then his sales department goes to work to 'upgrade' the customer from the lowest cost service to a higher cost service.

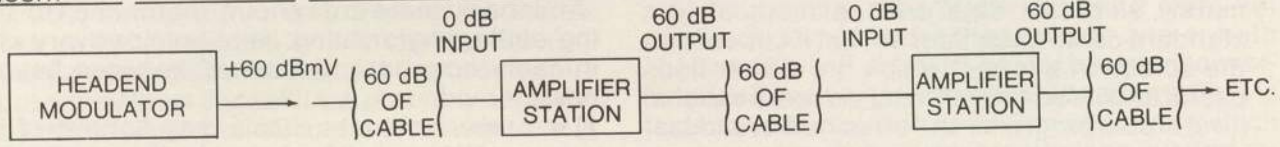
Cable firms measure sales success by counting something called **'pay units'.** That means they take all of their pay services (ie. those not on basic) and they total up the dollars they would gross if a subscriber took all of the extra services. Then they divide the number of services available into the number of dollars one would pay for everything. That produces an 'average cost per pay channel' and that average is called a 'pay unit'. A well run cable system averages between 3 and 4 'pay units' per subscriber. Most cable systems average between 2 and 3 'pay units' per subscriber. Dollars.

If the basic service costs $9.95 and the pay units average $8 each, a customer taking basic (always required to gain access to pay) **plus** 2.5 pay units is in fact spending $29.95 per month.

Pay television, delivered via satellite, has become the single most important factor in cable operations. Ten years back, when pay or premium cable was just starting with HBO's first national service, the average income per home was in the region of $6 a month. Along came pay, and the cable operator offered HBO alone (at first) for an



IF THE TV SET IS 6,000' RATHER THAN 3,000' FROM THE MODULATOR, AN AMPLIFIER STATION CAN BE PLACED AT A POINT NEAR 'MID-WAY,' ANOTHER LENGTH OF CABLE (3,000 PLUS 3,000 FEET IN EXAMPLE) CAN BE PLACED INTO 'CIRCUIT.'



WITHIN CERTAIN ENGINEERING LIMITS, AMPLIFIERS AND CABLE MAY BE STRETCHED OVER LARGE DISTANCES TO COVER WHOLE COMMUNITIES.

extra $8 to $10 per month. Now where he sold HBO he was receiving $6 for basic plus $8 (or more) for HBO. His gross revenues just doubled although he only kept half of the HBO gross receipts (the other half went to HBO of course). **His net income,** the number that added to his cash flow, **went up by 60 to 80%** just by adding **one channel**. He was ecstatic.

As more and more pay cable services came along, the cable operator found life getting tougher. First of all, he had to select the 'one best' pay service since nobody figured you could sell two or more to customers. Then he had to figure out what to do with all of those low cost or free satellite services such as CBN and WTBS. Some created 'premium packages' that grouped HBO, WTBS and CBN together. Now the customer, who may have balked at paying $8 for HBO **alone,** perceived a 'bargain'; he was getting **three channels** for $8.00. What the customer never knew of course was that CBN cost the cable operator nothing and WTBS cost him a dime (or less). The marketing folks began to look at other ways to change the customer's perception of what they were getting for their money on cable. And it was quite a balancing act.

Too much on basic meant you had less to offer on premium tiers, and as services such as CBN began to charge a (small) fee for their channel, the cable operator's overhead for basic slowly crept upward. Too little on basic meant that you might not 'sink the hook' in the customer and he might not even hook up to cable.

Mechanically, tiering became someting of an electronic nightmare. Let's say you used only channels 2-13 for basic. Fine; now you stick the tiers in mid band and on super band. The theory was that **people would need converters** to tune in the tiers and you, the cable operator, had the **only converters in town**. Well, not for long.

Soon Radio Shack and others had converters. Worse yet, the TV set manufacturers brought out step tuned tuners that clicked from 2-13 and A-Z without missing a channel. So much for 'hiding' the premium tiered channels in mid or super band.

The next approach was to somehow hide or scramble the premium service channels. There are two general approaches to cable scrambling in use:

1) Put the channel on the system, such as on channel A mid band. Now, offer the service to every home and all of **those who do not want it will have it taken away**. How do you take away a channel that is right there on the cable for everyone to see? Trap it!

A **'trap'** is a device that attaches on the cable line where the customer's service line branches inside. The trap takes out either a single channel or a (pre-designed) group of channels. Traps are made to function on specific channels and they cost typically under $10 each per channel or closely spaced channels. Some traps are in weatherproof containers, others are designed to look like pieces of RG-59/U cable (inside of the cable sheath is the trap).

2) Scramble, as in invert the video and hide the audio. When the cable company does this, it has to provide each subscriber to the premium service channels with a descrambler. The descrambler can be electronic (a box with electrical circuits in it), not unlike the Videocipher we are all familiar with, or, it can be 'passive'; a trap is used to trap out the scrambling signal that has been mixed with the real signal at the cable headend.

Passive trapping of all premium channels for all customers who **do not take** the service can be expensive and difficult to 'audit'. The cable operator ends up spending money for people who do **not take** the premium service, but he makes it back on those who do because he spends nothing to give them the service. On the other hand, **scrambling electronically** and then supplying paying subscribers with a descrambler costs him nothing for those who do not take the service but perhaps $50 to $100 for those that do. As you can see, on the surface, there is no one 'best answer' to how to protect the cable operator from improper access to his non-basic services. We'll look at this in some detail in this series.

Tiering of service, providing 20 or 30 or 60 (etc) channels in various pay levels is essentially an American invention that was first tried in Canada. Outside of North America, most cable systems simply package as many channels as they can offer and sell it for a flat price. Everyone gets everything, for an across the board price.

All of this, as you might suspect, makes the design of the cable headend quite complex. A basic 12 channel system, where everyone receives every channel and there is no tiering of services, is a relatively simple lash up of equipment. As channels are tiered and scrambled, moved around in frequency and combined for marketing purposes, the life of the headend designer gets more and more complicated. We'll look at the basics of headend design, and then deal with the complex variations created to foil the consumer in our next segment.

TVRO DOWN UNDA' HOME DISH SALES IN PACIFIC BASIN (Part 2)

SEVEN METER mesh surfaced dish at motel on North Island. This 18 unit motel was all booked up in advance when we tried to check in; the owner said his satellite TV was carring an important sporting event from the states and attributed the sold out condition to the satellite TV.

Most of the Satellite Television System packages had been built around mesh surfaced dishes. Big mesh surfaced dishes at that. If a 12 foot mesh dish was proving too inaccurate for Ku band work in North America, how much luck would Lubronski's crew have with 23 to 27 footers in New Zealand, at Ku band? Moreover, with the C band Intelsat bird in one location and the Australian Ku band bird in another, could the two separate services be produced off of one dish by 'offsetting' the Ku band feed? Experimentation was needed.

There were other problems as well. The Australian Aussat system has been designed to favor Australia both in the air and on the ground. The system uses the English created **B-MAC** modulation system. This is bascially **a form of scrambling** and the transmissions are unintelligible unless decoded by a properly designed and authorized B-Mac decoder. An Australian firm, **Plessey**, has an exclusive (ten year) 'license' to produce the B-Mac receivers equipped with the special decoder circuits. That means you cannot install a system that will decode the B-MAC encrypted video and audio unless it is a Plessey receiver. There are no Japanese or American receivers available except for a small quantity of badly overpriced Scientific-Atlanta commercial receivers sold to TV stations and other commercial users. Furthermore, until Plessey decides to 'license' or authorize others to build satellite receivers, there will be no other Australian made products available either. Therefore **all TVRO receivers for Aussat have to be purchased in Australia.** And once purchased, they must also be 'authorized' by the operational officials with essentially the same 'routine' HBO or Showtime subscribers must go through in the states to get authorization.

Surprise; the operational authorities to date have shown no reluctance to authorize for turn-on receivers physically located in New Zealand or Papua New Guinea. Unfortunately, there have been significant and ongoing problems related to

the Plessey receiver products.

The single largest Plessey 'distributor' in Australia is **Acesat**, a firm that installed more than 300 C band terminals in Australia during the heydays of C band interest. ACESAT's **Olga Sawtelle** estimates slightly under 3,000 Ku band receivers have been put into the field as of early in June. She says her firm has supplied 75% of these with approximately 300 going to 'PNG' (Papua New Guinea). In New Zealand, Martin Lubronski relates how much difficulty his firm has experience with the Plessey receivers. "**Of the first six, none worked**" he remembers. "**And then it got worse!**"

SATELLITE DISH, 7 meters in size, has high visibility at front of motel property in this promotional brochure for Golden Sands Motel in Orewa Beach.

PNG installers blame a high Plessey failure rate for **their problems** as well, but Olga Sawtelle is not so sure. "What we have found is that Ku band is far more demanding than C band. People accustomed to installing C band dishes develop 'poor habits'; they forget to find the true focal point for example because they have such a wide tolerance for the feed. We thought we had a real disaster happening with PNG when the first 100 or so receivers hit there. What we found, by comparing service callback records, was that people who had no previous satellite TV experience, in Queensland for example, were having far fewer 'Plessey receiver problems' than people who came to Ku from C band backgrounds!"

Olga admits that the early Plessey receivers were 'troublesome'; they didn't always work out of the box. But she disputes claims from New Zealand or 'PNG' installers that the failure rate was anything approaching 100%. **David Swales** of **Kennedys Electrical Centre** in far northern Queensland's town of Cairns agrees with Olga. His firm, when we visited with them in late may, had sold only 10 of the Ku band Aussat packages. We checked with four other 'dealers' in Cairns and found between them, they had sold about 50 units.

"We had one out-of-the-box failure" he related "and Plessey fixed it by return shipment. We have found that our customers, with no previous satellite experience can successfully install the terminals on their own. Of the ten we have sold to date, we have yet to install one ourselves." The going Queensland system package price, less installation, is about $2,800 (Australian) or about $2100 US in early June); something we will investigate in greater detail in our October report. There are persistent stories in the field throughout the South Pacific concerning the period of time Plessey holds the 'exclusive right' to produce the special B-MAC decoder-equipped receivers. Sawtelle, as the largest Plessey distributor, insists that Plessey holds that right for ten years.Others are equally sure Plessey will relinquish their monopoly within six months to a year. The history of monopolies in Australia does not lend support to the notion that Plessey will voluntarily 'license' other firms to provide the decoder-receiver units. We'll see why next month.

Meanwhile, back in New Zealand, Lubronski would be a far happier man if he could just get a handle on the Plessey service problem. Recently, Plessey through an established New Zealand

Television and radio

N.Z.-based TV service for Pacific Islands a 'real possibility'— TVNZ

A television service for the Pacific Islands, controlled by a council of the Pacific Islands, but administered from New Zealand, is a viable and real possibility, according to Television New Zealand.

Speaking on his return from the Pacific Islands News Association (P.I.N.A.) conference held in Western Samoa last week, TVNZ's Director-General, Mr Julian Mounter, said: "We got what we went for — a resolution calling on heads of broadcasting services and others, with an interest in regional media, to meet to consider a planned development of television in the region."

That conference, which it is hoped will meet at the end of June, is expected to discuss the TVNZ initiative.

Mr Mounter said he had appointed the former Director General, Mr Allan Martin, to head a team who would work with the Islands interested in the initiative. Mr Martin also has the advice of Mr Ian Johnstone, who now works with TVNZ's documentary department, but who worked in the Pacific for many years. Mr Martin has made an extensive tour of the region and is now working on detailed costings and examining the possibility of a limited experiment to test the technical effectiveness of the proposals.

Mr Mounter said it was important to note that the scheme put forward in Apia was designed as a discussion base. "We have a long way to go yet.

"First and most importantly, we have no intention of imposing anything on the islands. They must say what they want and we will then see if we can provide it.

"Second, there is the question of funding. We believe that the $3 million to $4 million can be found and I would hope that TVNZ will make a contribution; but we have other and higher priorities, not least doing more for the Maori community, so if we were to be asked to provide this service, we would be looking to Governments and international aid groups to help with the cost.

JULIAN MOUNTER

ALLAN MARTIN

"Third, there are a whole range of technical decisions to be made. Some of the islands are looking for the American N.T.S.C. system and others for the Pal system used in New Zealand, Australia and Britain. It would also have to be decided whether the islands wished to have small dishes serving small communities, or the facility to re-transmit from their main islands.

"All these matters are for them to decide. All around the world we are seeing satellite services 'imposing' their editorial standards and judgments across international frontiers. The islands are so small and so poor, it would be easy to swamp their cultures and their educational needs with an orgy of highly inappropriate materialistic visual junk — advertisements which sell things the people can never buy, programmes that raise their desires for things they can never achieve.

"It would be totally wrong, in my opinion, for anyone to take television to these islands without fully consulting with the people themselves about what it is they and their Governments want."

Mr Mounter said that the service being suggested as a starting point would consist of a simple transmission centre in New Zealand which would transmit educational information and some entertainment programming, backed up with news supplied by air freight from each of the island groups. It was envisaged that each group would have its own camera team, which TVNZ would help to train. Many languages would be involved and many different concepts of what would and would not work in a multi-language service.

"Again the islands must decide these things for themselves," said Mr Mounter.

New Zealand has links with the islands that go back centuries; it has a large island population who could help with production.

"We believe this co-operation would lead to our providing a better service to island people settled here, give them a better link with their former homes and provide us with a source of far better news and current affairs coverage of the Pacific. It would give the islanders a public service television which could compete with the commercially inspired Australian media barons system and it would balance up what is an incredibly unfair deal currently being offered by other organisations," he said.

PLAN to export New Zealand television to neighboring Pacific Islands, via satellite, is currently receiving serious study.

office (handling non-satellite equipment of Plessey manufacture) has begun to stock (or order 'on-order') the satellite receivers. It has, to date, been merely an ordering processing department however; they don't do any service on the receivers in New Zealand, yet. "They say that as their largest New Zealand customer, and with our test equipment and skills, they would like us to set up to do their service work here" reports Lubronski. To date, he has not even been able to get his hands on a schematic diagram. Turning a receiver around, from New Zealand to Australia and back for service/repair can be a lengthy process.

"If we are going to enjoy the kind of business growth and success we had before Australia abandoned C band, we must be able to make Ku band work here" believes Lubronski. "Not only did business drop in half with the switch-off of Australia, but we also lost the confidence and support of our existing customers. They had grown accustomed to service from the USA (AFRTS) and Australia. The sports, in particular, were important in New Zealand."

Engineers will tell you that big mesh dishes, in the 7 and 8 meter class, stand very little chance of providing 'useful performance' at Ku band. Lubronski's STS experience to date would lend support to that statement although they have made a couple of their previous C-band 7 meter mesh antennas play at Ku band. "We are totally above threshold in the Auckland (North Island) area" he relates when explaining the performance at Ku of some of their dishes. But the firm's engineers know that they really need a far more accurate surface at Ku band.

There are other things happening in the New Zealand television world which could have a significant bearing on the eventual role of New Zealand in satellite television. Now it is a minor league 'user' of other people's satellite signals. It could become a provider of programming as well.

Perhaps more than any other 'populated oceanic region', the South Pacific has evolved into a number of hardly related 'fiefdoms'. There is a gradual recognition that what they share in common may be more important than the basic political and heritage differences. Very recently, a proposal surfaced to create a 'regional television authority'; sort of a master programming service that would be linked to perhaps a dozen island-'states' via satellite. New Zealand quickly jumped on the proposal with an offer to sketch together the programming outline for the proposed service. At the top of the list is a concern that no single nation's programming tastes or economics be imposed on the other participants through the medium of television. The finger most often points at the USA in this scenario.

"It would be a mistake" goes the argument "to provide heavily suggestive programs such as **'Miami Vice'** to underdeveloped countries. The people there do not need, and the governments there will not appreciate raising expectations for material goods and social change which the country is not yet able to provide". This makes the programming service difficult to plan since virtually any programming that deals with the 'real world' has occasional visual references to 'material things' and 'social change' which natives in the **Soloman Islands** or **Vanuatu**, for example, have not yet been exposed to.

So New Zealand sees an opportunity here to yank the rug out from under Australia in the South Pacific tug-of-war. They suggest that Australia is 'too materialistic' and too 'worldly' in their approach to television to handle the 'delicate sensitivities' of the smaller island nations in the Pacific. There is at least one other remote player in this potential satellite service game; PNG's new broadcasting company. Until now, Papua New Guinea has had **no local television**. It has, however, been the largest 'out-of-Australia' market for Australian television; through VCRs and satellites. Soon, now under construction, PNG will have its first 'local' TV service. The promoter of this has visions of being a service provider for a much larger region if the satellite details can be worked out. His chances of success are considered remote but the fact remains that 'PNG' is much more like the remaining South Pacific island nations than either Australia or New Zealand and the governments of these other nations might find it easier to swallow (and manipulate) a small PNG broadcaster than a larger New Zealand video bureaucracy.

Lubronski and others see hope in all of this; hope that out of the dialogue now taking place there will be greatly increased use of satellites. He wants to position his firm to be able to capitalize on that eventuality. Smaller antennas are part of his program.

There is experience in New Zealand with a limited number of solid surface dishes; the kind which could in large aperture configuration prove adequate for Ku band service. What STS has in mind is a **five meter** sized dish **with Ku performance.** The firm's 7 and 8 meter dish surfaces have proven surprisingly 'good' (it is all relative at Ku band). Lubronski attributes this to their assembly method. They never assemble their antennas on the mount, as many five meter and larger antennas are assembled in North America.

"Our antennas are assembled on the ground, aperature 'up'" he notes. "Then we lift them into place with a crane." In between, the antenna's frame work and surfacing is 'proofed' several times with a proofing template and the string method. Others, such as the **Hero** brand in the states, have tried similar approaches with not as good results. Some study of the support structure of the STS dishes suggests that the back bracing system may be a major contributor to the ultimate dish surface accuracy. There is some proof of this in Papua New Guinea where STS has sold their seven and eight meter dishes to installers there.

SOLID aluminum surface at this motel seven meter dish could probably be adapted to Ku band use. Note extremely 'beefy' rear strut bracing on this New Zealand designed and produced antenna.

"They could never make the dishes play properly there" reflects Lubronski "but they also had to erect the dishes in place, on the mounts, because of a lack of crane erection equipment there. I simply do not believe you can build a highly accurate surface 'in place' in a size as large as 7 or 8 meters, using the low-cost construction techniques we must use."

In spite of the commercial success in 'PNG', where several firms have done exceptionally well

DOWN 'UNDA/ continues page 21

GREEN SHEETS

A MONTHLY trader's forum allowing industry promotion for surplus, outmoded and hard to find equipment.

THIS segment of CSD functions as an international buy/sell/swap and trade forum for equipment related to TVRO, cable, and (low power) broadcasting. **Subscribers** to CSD are allowed one **FREE listing** in Green Sheets per subscription year (forms to submit copy available upon request). Subscribers are also allowed additional listings at a discounted rate of **$25 per listing**. Display advertisers in CSD are allowed unlimited use of Green Sheets at a rate of **$20 per listing**. All others are charged **$35 per listing**; all orders must have payment enclosed, no invoicing or billing (you may **charge your listing** to your VISA or Mastercharge however). All Green Sheets listings are carried for a single month with a 100% 'roll-over' on the 1st of each month. **Deadlines:** 1st of month for that (current) month's listings. A 'full' listing consists of **120 letters, numbers and spaces** between words or numbers. Print or type all listings submitted; over-long listings will be rejected or edited by CSD. CSD provides this service without responsibility for the character of the listings and cannot validate the integrity of the listings or listors; Caveat Emptor! **Submit listings to** CSD, P. O. Box 100858, Ft. Lauderdale, FL 33310 **or call in listings** not later than 1st of month to **305/771-0505** between 9AM and 4PM eastern; have VISA or Mastercharge card handy when calling.

ANTENNAS

PHONE MAC-SAT (515) 228 5086 OEM FOR 8'-10' MESH ANTENNAS 8' SPUN STEEL TOP QUALITY LOW PRICES DELIVERED IN MID WEST.

INVENTORY SALE VSC HYDROFORMED ANTENNAS 8ft/6ft ONE PICE HYDROFORMED ALUMINUM FREIGHT. CALL ORDERS (402) 563 3625

CABLES

DESCRAMBLERS

FEEDS

No listing this issue

LNAs/C BAND

NEW, BOXED, TESTED PERFECT 100 degree LNA's BY AMPLICA. TOTAL COST WITH FREIGHT, $21.00 IN SINGLES OR MULTIPLES. CW ELECTRONICS, 1073 HURON DRIVE, HARRISBURG, PA. 17111.

LNBs/C and Ku BANDS

MOTOR DRIVES/Controllers

RECEIVERS/C-Ku for SCPC

No listing this issue

RECEIVERS/C-Ku for VIDEO

COMOS RECEIVER TOKI 99 ANDERSON 1000 1010 PETCOM 2 ANDERSON DC 1-450/950 LNB DRAKE 324B UNIDEN DC-B SEAVEY KU-C FEED. VIDEO COMMUNICATIONS, RD #1, BOX 67,MIDLAND, PA. 15059. (412) 643 4323.

LUXOR 9550/9554 COMBO WITH 18" ARM AND DOWNCONVERTOR UNUSED IN BOX $350.00. ALSO COMPUTERS AT TREMENDOUS DISCOUNTS. AWM-MICROS (404) 964 2253

AVCOM 2-A RECEIVERS/THE TOP OF THE LINE CHOICE FOR FRINGE AREA RECEPTION SUCH AS CARIBBEAN. EQUIPPED WITH WIDE/NARROW AUDIO FILTERING, PROSAT ACTUATOR INTERFACE AND POLAROTOR II INTERFACE. THIS IS THE BEST HOME RECEIVER FOR CARIBBEAN AND OTHER WEAK SIGNAL AREAS. SPECIAL PRICE OF $399 EACH PLUS YOU RECEIVE BONUS OF AVCOM PSA-35 1 HR VIDEOTAPE TRAINING TAPE EXPLAINING FULL OPERATION AND USE OF SPECTRUM ANALYZER. THIS $100 TAPE IS YOURS AS A FREE BONUS; LEARN ALL ABOUT SPECTRUM ANALYZERS FREE OF CHARGE! ONLY 5 RECEIVERS AVAILABLE AT THIS PRICE; CHECK OR MONEY ORDER ONLY; (NO INVOICING) AND INSTANT SHIPMENT. SAVE $100 ON THIS SPECIAL PACKAGE PRICE! DIRECT FROM CSD MAGAZINE, PO BOX 100858, FT. LAUDERDALE, FL. 33310. (305) 771 0505.

LOOKING FOR EUROPEAN STANDARD SATELLITE RECEIVERS. PLEASE WRITE ALI UNLOSY, MANOLYALI SOKAK No. 35, 3.LEVENT, ISTANBUL, TURKEY.

ELECTROHOME COMMERCIAL RECEIVERS WITH BUILT-IN AGILE MODULATORS; THE ULTIMATE SMATV FULLY AGILE SYSTEM WITH HIGH QUALITY VIDEO. BRAND NEW, $850 EACH. (201) 562 0087.

SOFTWARE/Programming Services

PQRS, LTD SEEK TO TRANSMIT SPORTS FROM USA AND CANADA. SOCCER, HOCKEY AND MORE. CONTACT : 4821 W FLETCHER, CHICAGO, IL. 60641-5113.

HOME DISH PROGRAMMING: 1/507-648-3841

S/TMC/HBO/CINE/CNN 1/800-528-DISH

SHOWTIME/THE MOVIE CHANNEL1/800-722-8226;1/800-422-9000

CNN 1/404-447-6302

CNN TROUBLE LINE: 1/800-344-6754

NOSTALGIA CHANNEL FREE DECODER: 214/869-4996

FIRST RUN MOVIES: 1/800-523-7150

PRIME-TIME 24 NETWORK SERVICE: 1/212-725-1132

TEST EQUIPMENT

AVCOM PSA-35A SPECTRUM ANALYZERS IN FACTORY SEALED CARTONS. THIS NEW 'A' VERSION ANALYZER HAS EXPANDED 800 MHz WIDE EUROPEAN BAND (900-1,700 MHz) IN POSITION 6 PLUS EXPANDED 2 dB PER DIVISION VERTICAL SCALE. FULL FACTORY WARRANTY, FIVE ONLY AVAILABLE. FREE WITH EACH ANALYZER AVCOM 2A WIRE-REMOTE RECEIVER AND ONE HOUR PSA-35 VIDEO TRAINING TAPE. A $2464 VALUE FOR $1965. DETAILS FROM ALLI LAKE, CSD MAGAZINE, PO BOX 100858, FT. LAUDERDALE, FL. 33310. (305) 771 0525.

INSTALLER DREAM TEST SET/AVCOM PTR-24 PORTABLE TEST RECEIVER DOES EVERYTHING DEALER NEEDS AT DISH INCLUDING DISPLAYING TVRO SIGNALS (A&V), SCAN TUNE, BATTERY OPERATED (RECHARGABLE),AFC ON AND OFF FOR TI CHASING, AUDIBLE SQUAWKER FOR PEAKING WITHOUT METER READING, POLARIZATION SELECT,SKEW ADJUST,FULL AUDIO TUNING AND FULL BANDWIDTH SELECTION,CLAMPED AND NORMAL BASEBAND VIDEO OUT,IF GAIN CONTROL AND MUCH MORE.THE ULTIMATE TEST SET,COMPLETE IN EVERY WAY,READY TO GO INTO FIELD WITH YOU TO INSTALL,TROUBLE-SHOOT AND MORE. NORMAL LIST PRICE $1375;ONE ONLY AT $1375 PLUS RECEIVE AS BONUS $399 VALUE AVCOM 2A COMPLETE FRINGE AREA TVRO

NOTICE: TVRO DEALERS

H.D. and John McCullough would like for you to know that they are still in business, and have been since 1980

But it seems that a lot of people simply like the way our receivers perform... — and keep on working — year after year (even with L-O-N-G cable runs!).

So when they want something they can really count on, they often use a McCullough receiver. (They should work OK, after all, each receiver is tested, cooked a couple of days then tested again after final assembly)

And have an order shipped the same day it arrives...

And deal with just plain folks who do what they say they will do.

---- SO NOW, CONSIDER THIS ----

Scrambling didn't stop TVRO, tho it slowed it down a lot. Temporarily.
(Prices for programming **will** come down a lot)

And the era of satellite communications is just beginning.

Let us help you enter this new era with;

- **4/12 GHz receivers**
- **Affordable Single Carrier per Channel** (SCPC)
- **Teletext decoders**
- **European band receivers**
- **Real bargains in LNA's and accessories**

Call or write for complete information;

McCULLOUGH SATELLITE EQUIPMENT, INC.

Route 5, Box 97
Salem, Arkansas 72576
Phone: 501-895-3167
or 895-3318

RECEIVER,BOTH IN FACTORY SEALED CARTONS.CHECK OR M.O. FROM CSD MAGAZINE,PO BOX 100858,FT.LAUDERDALE,FL.33310

MICROWAVE SWEEP GENERATORS/AVCOM MSG-5 UNITS SWEEP 3.7 TO 4.2 GHz WITH LED FREQUENCY READOUT TO NEAREST 1 MHz. BATTERY OPERATION PLUS AC,ALLOWS TEST OF C BAND LNAs & DOWNCONVERTERS PLUS EXTREMELY USEFUL IN PIN-POINTING EXACT FREQUENCY OF TI CARRIERS. BRAND NEW, FACTORY CARTONS. FREE $100 BONUS; RECEIVE AVCOM PSA-35 SPECTRUM ANALYZER TRAINING TAPE, ONE HOUR, $100 VALUE WITH EACH MSG-5. CHECK OR MONEY ORDER, $900 EACH DIRECT TO CSD MAGAZINE, PO BOX 100858, FT. LAUDERDALE, FL. 33310. (305) 771 0505.

900-1450 SWEEP GENERATORS/AVCOM MSG-1450 SWEEP 900-1450 MHz WITH LED READOUT TO 1 MHz OF SIGNALS DISPLAYED. PERFECT TOOL FOR TEST AND ALIGNMENT OF BLOCK IF RECEIVERS AND SYSTEMS; INTERNAL OR EXTERNAL VIDEO MODULATION. ALSO GREAT FOR READING OUT TI FREQUENCIES FOR FILTERS. 110 VAC OR INTERNAL BATTERY OPERATION. CHECK OR MONEY ORDER, $825 EACH INCLUDES FREE $100 BONUS PSA-35 SPECTRUM ANALYZER TRAINING TAPE. ORDER DIRECT FROM CSD MAGAZINE, PO BOX 100858, FORT LAUDERDALE, FL. 33310. (305) 771 0505.

TRANSMITTERS/Television

OFF-SHORE FOUR CHANNEL TV BROADCASTING SYSTEM. PACKAGE INCLUDES 4 TEN WATT UHF TRANSMITTERS IN 410-470 MHz REGION (12 MHZ SPACED CHANNEL TO CHANNEL) WITH 50 UHF TO VHF CONVERTERS. BASEBAND VIDEO AND AUDIO TO TRANSMITTERS PRODUCES HIGH QUALITY PICTURES WITH DIEC-DIRECTIONAL TRANSMIT ANTENNAS TO 10 MILES OR MORE LINE OF SIGHT. ORIGINAL COST OVER $8,000; $4,200 FOB FORT LAUDERDALE, AVAILABLE NOVEMBER 1ST. CONTACT ALLI LAKE AT CSD MAGAZINE, PO BOX 100858, FORT LAUDERDALE,

INSTANT VHF CHANNEL 4 TRANSMITTER/GO ON AIR WITH PROFESSIONAL LOOKING 10 WATT OUTPUT VHF CHANNEL 4 SERVICE BY CONNECTING YOUR OWN VHF MODULATOR ON CHANNEL 7 TO THIS MAGIC UNIT BUILT BY KEITH ANDERSON. 'TRANSVERTER/AMPLIFIER' ACCEPTS 0 dBmV OR GREATER CHANNEL 7 MODULATOR,PROCESSES TO CHANNEL 4,AMPLIFIES TO 10 WATTS (PEAK SYNC).UNIT SMALLER THAN SHOE BOX,REQUIRES 12/13 VDC AT 1 AMP (CONTINUOUS) POWER SUPPLY; CAN BE SOLAR PANEL POWERED. CONNECT TO JERROLD OR OTHER MATV RECEIVING TYPE YAGI ANTENNA ARRAY AND COVER UP TO 20 MILES RELIABLY (LINE OF SIGHT).SYSTEM HAS OPERATED IN CARIBBEAN 5 YRS WITHOUT FAULTING,24 HRS PER DAY;RECENTLY TAKEN OUT OF SERVICE.PRICE $900 CHECK OR MONEY ORDER. ALSO AVAILABLE,CHANNEL 7 INPUT,CHANNEL 7 OUTPUT (DRIVES WITH YOUR OWN CHANNEL 7 MODULATOR) AT 10 WATTS PEAK SYNC POWER. SAME POWERING REQUIREMENTS AS 7 IN/4 OUT UNIT. $700. ALSO AVAILABLE CHANNEL 9 IN/5 OUT AT 8 WATTS PEAK; $700. ALSO AVAILABLE

ATTENTION CARIBBEAN AND OTHER FRINGE-RECEPTION INSTALLER:

FACTORY SEALED CARTONS:
Avcom 2A Super Receivers/ 'The most sensitive home system electronics available!'

$399 EACH
plus **free**
$100 bonus
spectrum analyzer
videotape trainer
FREE with each order!

CSD (Direct) P.O. Box 100858
Ft. Lauderdale, Fl. 33310
(305/771-0505) **Quantities limited at this price.**

CHANNEL 4 IN/9 OUT; $900. ORDER DIRECT CSD MAGAZINE, PO BOX 100858, FT. LAUDERDALE, FL. 33310. (305) 771 0505.

BIG TIME VHF CHANNEL 4/PROFESSIONAL BENCO (OF CANADA) RACK MOUNTING 10 WATT PEAK SYNC CHANNEL 7 INPUT/ CHANNEL 4 OUTPUT TRANSVERTER/TRANSMITTER WITH INTERNAL POWER SUPPLY (117 VAC).THIS IS THE ULTIMATE QUALITY 10 WATT TRANSMITTING PACKAGE, BUILT-IN COOLING,LIST PRICE OVER $4,500. IN SERVICE NOW,OPERATIONAL 4 YRS WITHOUT FAILURE. REPLACING WITH CABLE TV SERVICE IN CARIBBEAN.PRICE $2,200 FOB FT. LAUDERDALE. CHECK OR MONEY ORDER DIRECT TO CSD MAGAZINE, PO BOX 100858, FT. LAUDERDALE, FL. 33310. (305) 771 0505.

NO CATEGORY/Too Late To Classify

KAY TOWERS-UHF-8 BT- 4'X4' ANTENNAS $40. DRAKE-24 RECEIVERS $40. ANDERSON ST-1000 & DIC $50. STS LNB 60 dB 70 degree - $60. BAWCOM SATELLITE VIDEO (501) 737 2521

BORESIGHT/FIND OUT WHAT THE LATEST INDUSTRY NEWS IS EACH WEEK IN THE INDUSTRY'S OWN 60 MINUTE REPORT. TUNE-IN BORESIGHT THURSDAY EVENINGS 9PM EASTERN SPACENET 1, TRANSPONDER 17 TO STAY UP TO DATE WEEKLY. DETAILS FROM (201) 562 0087.

FREE TEN DAY VACATION IN TURKS & CAICOS ISLANDS IF YOU ARE QUALIFIED TO REPAIR ZENITH, PANASONIC AND SONY TV RECEIVERS PRIMARILY SUFFERING FROM POWER SUPPLY PROBLEMS,AND CAN PAY YOUR OWN TRAVEL EXPENSES TO AND FROM TURKS & CAICOS ISLANDS IN CARIBBEAN, WE HAVE TEN FREE DAYS IN BEACH FRONT CONDO (VALUE $1,050) TO TRADE YOU FOR REPAIR ON APPROXIMATELY 15 TV SETS. CONTACT ALLI LAKE AT (305) 771 0525.

HOW TO PLACE A GREEN SHEET LISTING: if you wish to have a product or service listed in the next issue of **CSD Green Sheets**, do the following:

1) Save your mailing label for CSD. You are entitled to one **free** Green Sheet listing per year with your CSD subscription; no charge! Your mailing label is proof of your subscription and it saves Carol time in checking on you.
2) Paste the CSD addressing label on the form here as **proof** of your subscription.
3) Each listing is a maximum of 120 letters, numbers AND spaces (**spaces** are between numbers and letters and words), long. There are dashed lines below which correspond to those 120 letters, numbers and spaces. Fill the form out with your listing, one of 'each' per dashed line (after a little practice you may actually grow to enjoy this!).
4) If you are a subscriber and this is your **first listing** for your current subscription, **send no money**. That's right-just fill it out (with label) and mail in.
5) If you are a subscriber and this is your *second* (etc.) **listing** for the current subscription year, **enclose $25** per listing.
6) If you are a DISPLAY advertiser in CSD currently, your cost is $20 per listing. Enclose payment with listing(s).
7) If you are **not** a CSD subscriber, **shame on you**. For this oversight on your part, enclose **$35 per listing** and may your Vidare dish take on a permanent warp in the shape of a Ruffles potato chip.
8) Mail this form, **your payment**, and anything else you think Coop might like to **CSD Green Sheets, P.O. Box 100858, Ft. Lauderdale, Fl. 33310.** OR. Or, drive Carol bananas by **telephoning 305/771-0505** between 9 AM and 4 PM weekdays eastern time and have your VISA or Mastercharge card handy along with your carefully worded listing.
9) Listings that run beyond 120 letters/numbers/spaces will be edited to size by Alli Lake (aka 'Alli The Ax') and neither Alli nor CSD are responsible, legally, financially, nor morally for how your listing is butchered in the process (avoid butchered listings; count to 120 carefully).

ATTACH CSD MAILING LABEL HERE AS PROOF OF SUBSCRIPTION

CSD SUBSCRIBERS ATTENTION!

YOU ARE ENTITLED TO **ONE FREE** CSD-GREEN-SHEETS LISTING PER-YEAR **AS A CSD SUBSCRIBER.**

DOWN 'UNDA/ continued from page 20

in selling typically 12 foot dishes in the past, Olga Sawtelle of Acesat believes the 'PNG work habits' may be part of their problem as well. "There may be a total of 700 private systems in PNG" she notes. "And they have sold for dollar amounts in the $30,000 (Australian) region. Still, in spite of this dollar level, when these dishes were converted to Ku band service this year, they had far more mechanical problems than anyone else using Ku band. I attribute this to their careless work habits." The $30,000 (Australian) figure works out to around $22,000 US and as Sawtelle notes **"Can you imagine what might have happened in the US market if they had been selling 12 foot systems for $22,000!"** With 700 systems installed, the three primary installation firms have grossed over $15M (US) in about three years time. Now, perhaps half of the systems have been retrofitted for Ku for an **additional** $6,000 (US) each.

To date the Australian's use of satellite has been limited at Ku band to the national '**ABC**' (**Australian** broadcasting system operated by an arm of the government). Of all of the Australian services available, the ABC is perhaps the **least desireable** from a viewer viewpoint. It falls close to the PBS service in the states with occasional movies and dramas thrown in. Since the Australian (Aussat) satellite program is virtually controlled by the national government, there has been a reluctance of the Aussat system managers to allow other (more viewer competitive) services on the satellites. This is in spite of promises previously made to the contrary.

Aussat's system is based upon coverage beams, as CSD has related in the past and different portions of the continent-country are isolated from one another by these 'spot beams'. Western Australia, largely uninhabited, gets a beam of its own just as Queensland (the northeast) and the southeast does. This means that the Aussat managers can 'allow' non-ABC video programming on satellite in 'stages'. Western Australia will have the first of the long-promised services around September 1st. It will be a regional 'independent' service intended only for Western Australia. Other regional spot beam 'independent' services will follow but nobody will say exactly when. Each service is in theory addressed only to the viewers in that spot beam region and the satellite operator has computer control over which signals will decode and be viewable for each receiver location. The upshot of this is that even if you somehow engineer around the low signal level problem from spot beams sent to some other part of the continent, you are banging you head against the computer authorization code that is designed to keep you from viewing 'unapproved signals'. That effects firms such as STS who would like to be able to offer an antenna into Australia which is large enough to break across spot beam barriers so that viewers could tune in more than their own spot-beam delivered ABC plus single channel independent service. The entire system has been carefully 'engineered' to see that everyone receives 'some television' but nobody receives 'too much television'; except after governmental approval. We'll look at this stumbling block in greater depth next month as we focus on Australia proper.

There is one additional possiblity for New Zealand but it is doubtful it will happen without outside technical and programming expertise. The opportunity found here involves those 25,000 or so motel/hotel rooms and the 'passion' for 'Videos'. The thinking goes like this.

Satellite time would be acquired for the transmission of perhaps **six hours per evening** of movie and special events into New Zealand's motels and hotels. The programming, with proper planning, could even be uplinked as a package from a location such as Hawaii or California and still be downlinked in a **controlled fashion** to New Zealand. With some additional planning, it could cover the majority of the Pacific basin as well, thereby enlarging the marketplace.

In recognition of the relatively small ground

Exporter squeeze

Higher relative inflation and the rise of the New Zealand dollar have undermined New Zealand exporters' competitiveness in the United States.

This is shown by a study made by Canterbury International, Ltd, the subsidiary of Lane Walker Rudkin Industries, Ltd, which has made spectacular sales of leisure clothing in North America.

Until this year, the higher inflation in New Zealand than in the United States had always been more than counterbalanced by the declining ratio of the kiwi dollar to the American currency, the study found.

"This year, however, New Zealand's competitive position has been seriously eroded," Mr David Phillipson, managing director of Canterbury International, said yesterday.

"New Zealand's exporters are continually being informed that their loss of competitiveness in overseas markets is a function of the appreciation of the kiwi dollar, then someone points out that in 1980 when New Zealand was competitive in the United States market, the New Zealand dollar was as high as $US0.99. Now the dollar is around the $US0.55 level but exporters are struggling to compete."

The Canterbury International study found no one cause of the exporters' problem. Rather, Mr Phillipson said, it was a combination of the movement in the N.Z. — U.S. exchange rate and comparative inflation rates of the two countries. This was the key to the present difficulties of exporters trading with America.

By combining the effects of the exchange rate and relative inflation, Canterbury International deduced an over-all effect.

Until this year the net effect of this equation had always remained positive, unless the decrease in export incentives in 1985 was to be taken into account. This year, however, New Zealand's competitive position has deteriorated dangerously, the study report says.

In 1985, the report says, New Zealand's inflation rate was four times that of the United States.

In America, cumulative inflation from 1980 to 1986 was 52.1 per cent compared with 127.5 per cent in New Zealand (assuming a 10 per cent inflation figure for 1986). During the same six years wage rates in the United States rose 44.3 per cent while in New Zealand they rose 128.3 per cent. This inflation, however, has been more than compensated by the declining New Zealand dollar.

But this year, even if inflation were to decrease to single-figure proportions, New Zealand inflation is still likely to be about three times that of the United States. Now that the New Zealand dollar has levelled, and is even appreciating against the United States dollar, New Zealand's competitiveness is seriously affected in the United States market, the Canterbury International study says.

In both 1984 and 1986 the New Zealand dollar was worth an average of 57 U.S. cents. But the much higher inflation in this country has now made our exporting "very uncompetitive."

Other international problems are compounding New Zealand exporters' difficulties. For example:

● Overdraft interest rates in New Zealand are three times American rates.

● Air New Zealand recently announced an increase

NEW ZEALAND worries constantly about the relative position of their dollar against US dollar. Presently, their high inflation rate (they feel) **makes their economy** "very uncompetitive".

space available at the tropical New Zealand motel, and in the interest of holding ground portion cost down, ideally the service would be transmitted at Ku band. Unfortunately, given the present Intelsat tariffs for Ku band high power service and the present availability of such transponders, the transponder costs would be greater than the anticipated revenues. **But not by much.**

There is another element; the proposal to tie the South Pacific together with daily television programming, produced and uplinked from New Zealand. This program, directly or indirectly, would be largely paid for by a collective of individual governments involved in the project. "Suppose" it is mused "the commercial interests who would like to see a six hour per evening movie service and the broadcasters who would like to have daily education, entertainment and news feeds got together? **Suppose they shared a transponder** and thereby reduced the costs to each?"

The concept has merit if carefully structured from the beginning. One way to expand the motel/hotel reach for the proposed New Zealand 'satellite entertainment project' would be to enlarge the user base. Australia with its far larger motel/hotel base, for example, would easily push the project 'over the top'. There are additional lodging units spread from Tahiti to 'PNG' that would profit by having such a movie service available. If the service was carefully controlled **to preclude any viewing by individual home terminals, thereby limiting the service to motel and hotel rooms, many of the objections and social concerns held by individual governments would be overcome.**

"Let them tax the service" suggests one planner. "Make it look like an additional source of revenue to the governments; that would help gain approval. If they taxed the motel/hotel feed portion, and then their local (often government operated) TV service benefitted from the TV program feed portion of the service, they get the best of both worlds; better, local broadcast television AND an income from a service which will improve their tourism base.

Summary

New Zealand, as we note in Coop's Comments, has for hundreds of years existed as if the world were a long, flat ribbon and their country was located at the far end of the ribbon. This has kept them isolated and allowed the country to develop along unique lines. Now there is a national feeling that this relatively small enclave of 3,000,000 is ready to 'put something back' into the world other than 70,000,000 sheep each year. Respect for New Zealand is high in the region because they have largely kept out of other people's affairs. Satellite communications may provide the form of 'electronic evangelism' New Zealand needs to move from the end of the ribbon closer to the middle. The next three years will be crucial.

WESTERN UNION IS IN TROUBLE

by Captain Electron

Fifteen years or so ago, prior to the launch of the first Western Union domestic satellite, Western Union (WU) had a loyal and dedicated crew working diligently towards a common goal. I was hired at a west coast office for the firm at a time when 'torn tape' was a labor intensive method of getting a telegram (our principal source of revenue at the time) through our communication chain. For those who were never exposed to the system, reperforated tape (reperf) was quite a sight to see in operation. A typical major office had between 35 and 40 employees who had that special talent to read the 'baudot code' directly off of the tape, logging it 'from' and 'to' and then setting it back into a tape transmitter to await a 'pulse' saying it was time to send it on, relay fashion, to the next office in the line. During the Christmas rush period, the 50 by 90 foot rooms became an absolute madhouse; the 'roar' of those old reperf machines was almost beyond the threshold of (hearing) pain for the employees. Even those of us working in nearby rooms, not connected directly with the message origination and relay, were treated to sound levels that defied comparison. The original reperf machines were 'invented' back in 1947. We were a regulated monopoly, but the public knew we were dependable even if our system(s) were slow.

In 1970, WU completed an agreement to purchase something called 'TWX', a competitive,

switched teletype service from AT&T. This was something of a milestone for WU; AT&T and WU had been a single company until 1912 when the federal government brought anti-trust suits against the firm. One of the outcomes of the federal suit had been divestiture of the WU operations from AT&T. In spite of the divestiture, the two firms had maintained at least a close working relationship through the years and WU received from AT&T things such as preferential rates for local cable pairs running from our office (for example) to the customer office. At one point, the rates were 50 cents per cable mile per month, and this allowed us to install 'time clocks' at most of our customer locations. However, by 1970 the handwriting was clearly on the wall; the long anticipated decline in revenues from telegraphic business activities was at hand and the company faced the real prospect that it would be out of business in less than a decade. The 'telegram' was an antiquated form of communication and WU was wise enough to see this happening. Telex, or switched services, was the wave of the future; we hoped.

By April of 1971, the Western Union shops were handling the repair of the TWX/Telex machines nationwide although AT&T was continuing to carry the actual message traffic on the AT&T plants while WU upgraded its national circuits to allow us to do the same thing. Personally, I was being exposed to the inner workings of the telephone company by being a part of a team working closely with the telephone company during this transition period. With 'bringing home' of the Telex services, the WU 'monopoly' for this form of communications was once again reasonably complete and the firm expected and had a 10% growth in switched (Telex) revenues through the 70s, according to annual WU reports.

Over the years and decades, the driving force behind Western Union had always been the engineering department. The firm had been 'first' at so many technical innovations that in spite of our outmoded basic telegraphic services of the late 60's, overall we looked like a very impressive firm. Hand in hand, management was willing to expect and accept a seven year payback period for expenditures in engineering. In 1973, two events took place which, looking back, were significant milestones not only for WU but for communications in the U.S. overall.

1) **Westar 1** was launched; not only was this the first privately owned and operated 'domestic' satellite, it put WU back in the 'telephone transmission business' which we had abandoned back in 1924.

(**Editor's note:** AT&T had the only real operating 'national telephone' or voice grade network in the U.S. at the time. WU's circuits were seldom capable of voice grade transmissions although the network size and scope was sizeable. Building an entire, national, **voice-grade** network on the ground to allow voice grade circuits for customers was clearly out of the question. One satellite however, had the capability of providing an instant national voice grade network.)

2) **Robert Flannigan** became the President of WU, succeeding Russ P. McFall. Flannigan was ostensibly hired because of his Harvard business and accounting background.

The new President wanted to make changes. WU was an 'old boy network' type of company with a 'zero-growth' union always overseeing the operation to keep the 'good old boys' in check. The

TO ALL WESTERN UNION EMPLOYEES:

THE PURPOSE OF THIS MAILGRAM MESSAGE IS TO LET YOU KNOW WHY WESTERN UNION IS IMPLEMENTING THE PROGRAM WE HAVE JUST ANNOUNCED TO REDUCE THE TELEGRAPH COMPANY'S WORK FORCE.

THE DETAILS WILL BE COMMUNICATED SEPARATELY, BUT, BRIEFLY, THERE IS TO BE A VOLUNTARY RETIREMENT INCENTIVE PLAN, FOLLOWED BY A LAYOFF AFFECTING ALL DEPARTMENTS -- BUT BEARING MOST SIGNIFICANTLY UPON THE FIELD SERVICE DIVISION AND THE OPERATIONS DEPARTMENT. WITH REGARD TO THE RETIREMENT INCENTIVE PLAN, LET ME EMPHASIZE THAT THIS PROGRAM IS ENTIRELY VOLUNTARY. IF YOU ARE ELIGIBLE YOU MUST MAKE YOUR OWN DECISION. NO ONE IS AUTHORIZED TO INFLUENCE YOU IN ANY WAY.

THIS WORK FORCE REDUCTION IS OUR RESPONSE TO A LONG-TERM TECHNOLOGICAL TREND, THE EFFECTS OF WHICH HAVE BEEN MADE WORSE BY SOME OF THE TARIFFS FILED IN THE WAKE OF THE AT&T DIVESTITURE.

THE LONG-TERM TREND IS THE MOVEMENT AWAY FROM ELECTRO-MECHANICAL EQUIPMENT, ESPECIALLY IN CUSTOMER TERMINALS. THE TARIFFS ARE THE ONES FILED BY THE TELEPHONE COMPANIES WHICH RAISE THE COSTS OF DEDICATED ACCESS LINES AND WHICH DON'T VARY WITH DISTANCE, THUS CREATING A NEED FOR US TO REDESIGN OUR NETWORK.

THESE TARIFFS ARE SCHEDULED TO TAKE EFFECT IN NOVEMBER, MAKING IT NECESSARY FOR US TO INITIATE NOW A PROGRAM TO REALIGN OUR COST STRUCTURE TO HANDLE THE CHANGED TECHNICAL REQUIREMENTS WE'LL BE FACED WITH BY THE END OF THIS YEAR.

WHILE THIS TREND AWAY FROM THE TECHNOLOGY OF THE PAST IS CAUSING SOME PAINFUL ADJUSTMENTS, THERE IS ANOTHER SIDE TO THE PICTURE. WESTERN UNION HAS LED OUR INDUSTRY IN SEIZING THE OPPORTUNITIES THAT ARE ALSO BEING PRESENTED BY THIS CHANGE. SINCE MY MAILGRAM MESSAGE LAST DECEMBER, EASYLINK HAS GROWN AT AN ACCELERATED RATE. BOTH OUR DAILY TRAFFIC VOLUME AND THE NUMBER OF CUSTOMERS HAVE MORE THAN DOUBLED. AND WE ARE NOW PROVIDING MODERN ELECTRONIC TELEX TERMINALS AND INTRODUCING A NEW SYSTEM OF TELEX ACCESS WHICH HELPS OUR CUSTOMERS TO AVOID THE EXORBITANT COSTS THAT WILL BE INCURRED FOR DEDICATED ACCESS LINES.

TO REPLY BY MAILGRAM MESSAGE SEE REVERSE SIDE FOR WESTERN UNION TELEX AND TWX NUMBERS

PAGE 2

Western Union Mailgram

AND, OF COURSE, WE HAVE BEEN TAKING CONCERTED MARKETING ACTION TO STRENGTHEN OUR POSITION ACROSS THE BOARD AS YOU ALREADY KNOW FROM SEEING OUR EASYLINK AND CELLULAR RADIO ADS.

THESE AND OTHER ACTIONS WE ARE TAKING WILL POSITION WESTERN UNION TO COMPETE EFFECTIVELY IN 1985 AND BEYOND. OF COURSE, WE CAN ONLY DO THIS WITH THE HELP OF ALL OUR EMPLOYEES, AND, EVEN WHILE TAKING THESE PAINFUL ACTIONS, I AM ASKING YOU FOR THAT ASSISTANCE.

R.M. FLANAGAN,
CHAIRMAN OF THE BOARD
AND CHIEF EXECUTIVE OFFICER

WESTERN UNION 'Mailgram' **sent to all employees July 14, 1984 advised of impending plan to cut work force. Text noted** "This work force reduction is our response to a long-term technological trend, the effects of which have been made worse by some of the tariffs filed in the wake of the AT&T divestiture". **What it meant was that WU had been caught behind in the race to employ more and more modern telecommunications equipment and techniques, even though WU owned their own satellite system network.**

'wires' between offices buzzed with rumors and gossip that kept everyone working the same floor at the 'wire centers' abreast of who was doing what and where. Corruption was on some rare occasions overt and the company's policies tried to keep it in line. I recall an installation foreman who was fired while those above him, responsible for his actions, were 'let off the hook' although the evidence suggested the foreman had 'paid off' those above him with tires for their camper trucks and so on.

By 1974, Flannigan had introduced something called **'Product Line Management'**. PLM was apparently intended to cure the 'old boy network' syndrome and it introduced a new level of company 'efficiency' by making each manager-person responsible for a single type of service offering. The concept was that various 'communication packages' offered by the company, to the public at large or to corporations requiring their own intra and inter corporate communication systems, would be operated as if they were 'stand alone' services. In effect, each different service offering was 'competing' in the marketplace with every other service offering, whether the competition was a WU service offering or not. This 'vertical integration' did more to set the company up for what was yet to come than any other single event in the decade. This put considerable strains on the still 'horizontal' support engineering, which was supposed to treat each offering and each service as if it was but a small segment in an otherwise complex system. The net result, quite quickly, was that cooperation between 'product lines' and departments virtually disappeared.

By 1976, what had been a closely operated company with tremendous feelings of 'kinship' between departments and employees had a new atmosphere. Employees, entire departments were no longer 'communicating'. That same year, an end to another 'era'; the court's 'Carterfone Decision' forced AT&T to abolish something called facility contracts and in the process substitute something called 'OCC' or other common carrier tariffs. WU was AT&T's largest customer at the time, even larger than the U.S. Government. This allowed WU to enjoy many special rates. As an 'OCC' however we became '**one** of the six' which included ITT, RCA Americom, RCA Globecom, WUI, TRT and French Telecable. Today there are 27 such OCCs operating and this event has caused many significant changes and not a few hardships to the Western Union operation.

In 1978, the 'squeeze' was plainly evident. Facility charges from the new OCC tariffs on the large plant being operated by AT&T for the AT&T divested (to WU) TWX system forced WU to begin a series of rate increases. WU was also forced to develop its own 'switching system' for the TWX service. We began by trying to force some older Univac 418 III computers which we had on hand from an older 'Infocom' service offering. WU developed a digital switch which we called 'DES' for Digital Exchange Switch. This was done at 4 major locations (NYK, ATL, CHGO and SFO) as we could consolidate the analog TWX service at 'local distribution centers' so that a cable would take the service that all important 'last mile' to the customer.

By 1980, the chickens had come home to roost. The money the company was saving by reducing the facility charges was being spent just as fast, or faster, by the 'PLM' or product line management program. In particular, engineering was in a new state of disarray. Local, resident engineers who had spent years or decades developing certain expertise with specific systems were now either split into several different 'PLM' disciplines, or perhaps worse yet, assigned fulltime to a particular PLM program and then required to justify their time with that group when it was obvious they didn't need fulltime to keep a project operating properly. At this point something else was

---

Editor's Note:

Western Union pioneered the domestic space satellite system in the United States, and with the limited exception of the government funded domestic systems in Canada and Russia, in the world. The transition from a 'wireline' message communications company to a 'spaceline' international (common) carrier has been difficult for the firm. Recently, in an effort to stave off total financial collapse, WU has agreed to sell off control of its three operating (and a forth waiting to be launched) domestic satellites in a complex sell/lease back arrangement with a group willing to gamble on WU's future.

Internally, Western Union has experienced a devasting round of operating changes which has left company morale at all time lows and union-worker problems at all time highs. **Captain Electron** works for Western Union, and is in a position to assess the effects of both external and internal problems on the firm for its near and long term surviability. The true identity of the author of this report is not disclosed because of the certainty that he would be dismissed from employment at Western Union if he was identified.

The complete failure of Western Union and the 'auction-blocking' of its remaining assets could cause significant disruptions to satellite traffic now handled by the firm. Captain Electron, along with many other WU 'observers' both internal and external to the firm fear that the firm may be very close to that very scenario.

happening in marketing and sales growth; the 10 to 15% growth per year was slowing down. Additionally, 'Private line' innovation had stopped at the engineering level and Western Union was actually losing customers to other, perhaps more innovative technology.

Into this situation, the Westar satellite(s) should have come along like a shining knight to rescue the company. Unfortunately, there were major problems with the Westar **voice** connections, largely (it would turn out) due to the technical incompetence of a company which had spent more than 50 years transmitting data and no voice.

President Flannigan's response to this stagnation in revenue growth was to go on a corporate buying binge. The philosophy seemed to be "diversify" and "if the existing services cannot grow and make money, buy some complimentary services that can grow and make money". On the surface it was not a bad plan. The buying binge ballooned the corporate debt/equity ratio, in the wrong direction. Twenty four different companies were brought under the corporate WU logo in that period. Unfortunately, not all of them were winners and many had a difficult time integrating into the WU operations. WU was into real estate (usually safe if done wisely), cellular radio, manufacturing, stock quotation services as well as 'Airfone' (telephones on airplanes) and 'Metrofone' (discount long distance telephone service). Each company plus each product line within the original 'Telegraph Company' was guided by its own 'PLM' and all supposedly drew upon common resources which were becoming increasingly underfinanced and overtaxed.

By 1983, it was apparent there were numerous things which were not being reported accurately nor completely in the firm's internal "WU News". An example. For years the Siemens Company (of West Germany) had been designing a switching 'machine' to take care of WU's complex data switching needs. Af first it was called 'Complant' and they developed a prototype in the New York office which unfortunately did not satisfy the PLMs that it would handle their particular needs, nor justify additional funding. **WU poured $150M and 12 years into this complex piece of equipment;** and failed. In those 12 years the entire communications industry had passed by this particular type of switching system in favor of something newer and better called 'packet switching'. Packet switching sends data a line at a time, and is usually configured to verify each line before another line is sent.

Packet switching, as a design problem, was (also) given to Siemens and they developed a successful machine called the 'EDX' (electronic data exchange). They designed the 'EDX' system around a digital computer called the PDP-11. Packet mode allowed a dial-up connection to replace the last 'costly mile' local cable pair plus handle speed and code conversion between any of the known (teletype) formats. This was extremely important since there were many 'standards' in use at various customer locations and for one (teletype) machine to be able to converse with any other (teletype) machine was a major problem. WU installed a central 'node computer' at Bridgeton, Missouri and connected it to 22 different regional network concentration facilities. Each of these was capable of handling data speeds of 50 kilobauds or as slow as 50 bauds. The Western Union PLM called this system **'Easynet'**.

Meanwhile, the 'DES' engineering group headquartered in Mahwah, New Jersey was beginning to see a 'threat' to their jobs. To protect themselves, the DES 'PLM' ordered a new type of ser-

```
0+
WU NEBCC SFO C

WU INFOMASTER   1-01836013330002-009 11/28/84
TLX WU CREDIT UPSR
SUSPECTED DUPLICATE
ZCZC 02 UPSR NJ 11/28/84
TLX 348894 WU NEBCC SFO
ATTN:  MANAGER AREA ACCOUNTING

BT


THE FOLLOWING ANNOUNCEMENT HAS JUST BEEN ISSUED BY WESTERN UNION
CORPORATION.  PLEASE GIVE IT THE WIDEST POSSIBLE DISTRIBUTION
AMONG EMPLOYEES AT YOUR LOCATION.

THANK YOU.



                                        NOVEMBER 28, 1984

TO:    ALL WESTERN UNION EMPLOYEES

FROM:  T. R. BERNER

     TODAY, I MET WITH OFFICIALS OF THE COMMUNICATIONS WORKERS OF
AMERICA AND THE UNITED TELEGRAPH WORKERS TO ADVISE THEM OF THE
DIFFICULT CONDITIONS NOW FACING OUR COMPANY AND TO SOLICIT THEIR
COOPERATION IN HELPING US PUT WESTERN UNION ON A SOUND FINANCIAL
BASIS.

     WE MUST PUT DRASTIC COST CUTTING MEASURES INTO EFFECT
IMMEDIATELY, SINCE WE HAVE EXTREME DIFFICULTY IN MEETING PAYROLL
EXPENSES FOR THE WEEK ENDING DECEMBER 14.  THE COMPANY IS NOW
LOSING MONEY AT THE RATE OF $7 MILLION PER MONTH.  WE ARE
AGGRESSIVELY ATTEMPTING TO SELL THE FIELD SERVICE DIVISION AND
OUR E. F. JOHNSON COMPANY SUBSIDIARY IN ORDER TO RAISE CASH.
MOST IMPORTANTLY, THE BANKS HAVE CANCELED A $100 MILLION LOAN THAT
WE DESPERATELY NEED -- WHICH HAS MADE THE NEAR-TERM CASH PROBLEM
ALL THE MORE SEVERE.

     TO DEAL WITH THIS CRISIS WE HAVE CANCELED ALL DIVIDENDS ON
THE COMMON STOCK; AND WE HAVE EVEN CANCELED ALL DIVIDENDS ON ALL
OF WESTERN UNION'S PREFERRED SHARES.  ALSO, THE BOARD OF DIRECTORS
HAS VOTED UNANIMOUSLY TO FOREGO ALL DIRECTORS' FEES.

     REGRETFULLY, HOWEVER, THESE ACTIONS FALL FAR SHORT OF MEETING
OUR NEEDS.  WE MUST CONTINUE TO REDUCE CASH OUTLAYS IN ALL OTHER
AREAS SUCH AS CAPITAL EXPENDITURES, BUSINESS TRAVEL, ETC.  HOWEVER,
IN ORDER TO SURVIVE, WE MUST ALSO ASK FOR THE HELP OF ALL EMPLOYEES,
BOTH BARGAINING UNIT AND NON-BARGAINING UNIT ALIKE.  WE NEED, AT
A MINIMUM, THE EQUIVALENT OF A 20-PERCENT REDUCTION IN ONGOING
WAGE AND BENEFIT COSTS, AND A PROPOSAL TO PUT SUCH A REDUCTION INTO
EFFECT PROMPTLY WAS THE MAJOR ITEM AMONG SEVERAL WHICH WE PUT
FORTH IN OUR DISCUSSIONS TODAY.

     YOU WILL BE KEPT APPRISED OF FURTHER DEVELOPMENTS AS THEY
OCCUR.  I ASK FOR YOUR SUPPORT IN THESE DIFFICULT TIMES.

NNNN
1608 EST
+
WU NEBCC SFO C
```

WESTERN UNION text to all employees, dated November 28, 1984 warned that salaries would be cut by 10% and noted "We have extreme difficulty in meeting payroll expenses for the week ending December 14th. The company is now losing money at the rate of $7 million per month".

vice, also dial-up based, to save those Telex facilities. Telex had been integrated into the DES program with the changeover from the old style electromechanical switches over an 8 year period. The new service was called 'Economy Telex' and the corporate identity of TWX was changed to 'Telex 2'. With the changeover and the newly developed system, the sales force for the service began 'gutting' the dedicated Telex customer base. These were the most loyal customers WU had at the time, having put up with years of corporate neglect and rate increase after rate increase because they liked what the service was and did for them. The 'new plan' was to convert these firms over to the new 'economy telex' service.

Well, that was the straw that broke the WU corporate back. Profits slid when the Easylink PLM and the DES PLM both put into operation dail-based switched systems which competed with one another. President Flannigan reacted to the head to head internal competition by offering 'early-out-bonuses' as a tactic to persuade older, senior employees to get off the corporate payroll. Engineers with decades of broad experience with WU systems either left the company early or made themselves available to the competition. Remember, we were in the midst of a communications revolution at the time and new 'nationwide communication companies' were springing up weekly. There was a high demand for engineers just at a time when WU was creating massive internal problems which made engineers unhappy.

With internal operations going from bad to worse, there came the now famous August 1984 meeting of the WU Board of Directors. There, Flannigan was offered a 'golden parachute' opportunity he did not pass up. Corporate raider Roland T. Berner, who's Pratt and Witney Aircraft already held 14% of WU's traded stock, became the new President of Western Union.

Everyone took a 10% wage cut in January of 1985. In the midst of this, new management for the primary trade union covering WU employees had negotiated 'new promises' that we all hoped might get WU back on its feet. The company briefly opened its corporate books to a union consultant in that 'negotiation period'. His $30,000 a month fee, to the union, apparently did help the Union to better 'understand' the plight of the company. However, in retrospect as soon as the pay cut was approved by the union, the 'spirit of cooperation' seemed to dissipate and things quickly returned to normal. Normal in that period was 'fear' on the part of the employees and 'panic' on the part of management.

The antagonism between the two sides reached a fever pitch and in July of 1985, the union 'struck' Western Union. Primary issues included additional 'givebacks' the company was requesting plus new work rules pegged to cost of jobs. The strike lasted ten days and came to a stop when the union realized that 1 employee out of 5 was crossing the picket lines. Because of 'scabbing' the union was virtually guaranteed that the strike would not work. In settling the strike on August 7, 1985, the union gave the company everything they wanted in their '10% giveback message' of the previous December.

Perhaps unrelated, perhaps not, there was at least one good move in the midst of all of this commotion. New president Berner elected to scrap the 'PLM' program. This was the internal management program created by Flannigan which divided the company up into individual product-by-product 'fiefdoms' with the product line manager responsible for the success (or failure) of his service offering. Currently, we have Western Union people talking internally to Western Union people, for the first time in perhaps a decade. That is not all bad.

UNITED TELEGRAPH WORKERS

701 East Gude Drive, Rockville, Maryland 20850 • (301) 762-4444

Affiliated with American Federation of Labor and Congress of Industrial Organizations Canadian Labor Congress

RICHARD C. BROCKERT, International President
REVA M. KOCIOLEK, Int'l Vice President for U.S.
J. M. CLARKE, Int'l Vice President for Canada
JERRY GRIM, International Secretary-Treasurer

International Executive Board
A. D. HAGMANN, Chairman • STEVE QUINLAN, Secretary • RALEIGH L. BROWN • J. M. CLARKE • ROBERT D. DeVAULT
GERALD MOYER • ROBERT W. REASE • ROBERT SCALES • A. J. SILVA • KENNETH SIMPSON

PLEASE POST

WIDEST DISTRIBUTION

December 5, 1984

TO ALL WESTERN UNION EMPLOYEES

DCL BULLETIN NO. 35-83

The United Telegraph Workers and Communication Workers of America Bargaining Committees would like to apprise you of the following facts:

1. Both Unions are committed to work together for the common good of all employees.

2. The Corporation's financial crisis is, by their own admission, not as a result of collective bargaining agreements but rather a result of mismanagement.

3. Your Union's representatives have committed to do whatever possible to ensure the long term viability of the Company and secure productive employment for all.

We are continuing to negotiate in an effort to accomplish these goals.

With best regards.

Fraternally,

INTERNATIONAL BARGAINING COMMITTEE
Richard C. Brockert, Chairman
Reva M. Kociolek
Betty Bedwell — Raymond Koller
Elmer Doran — James A. Marquardt
W. L. Eidson — Daniel J. Wielgat

RCB:jv

UNITED TELEGRAPH WORKERS memo to all WU employees dated December 5, 1984 noted "The corporation's financial crisis is, by their own admission, not as a result of collective bargaining agreements but rather a result of mismanagement".

There is now talk of retiring the (very) old Univac 418 computers and folding the DES program into another existing program called WUTCONET. Airfone has quietly slipped out of sight, sold at a substantial loss from its original acquisition price. A similar fate awaited cellular radio projects plus the E.F. Johnson Company, which had been brought into the WU family as a 'manufacturing arm' some years prior (*). The metrofone program had stopped on its own when only eight of the Northern Telecom DMS250 telephone switches were installed. WU has stopped offering Metrofone to new customers although it is still possible to buy it if you live in an 'equal access area'. Metrofone is now renamed WU Long Distance Service (WULDS) and it is offered primarily to US Tel, Allnet and ITT which use it for their 'overflow/extra capacity' needs during especially busy calling periods.

Western Union, never a true corporate giant in communications, made a bold move into the world of ultra-modern telecommunications with the decision to build and launch the first domestic satellite system. Westar 1 (and 2) blazed a trail through the heavens which more than a dozen firms worldwide would follow in the ensuing two decades. Much of the planning for the Westar system envisioned premise to premise direct voice and high speed data interconnection. Certainly at some point, as WU struggled to make a quantum leap from 1920's wireline technology to 1970's spaceage technology, there was the belief that the Westar system would position WU as **'the** growth communications company' for the balance of this century. Why this did not happen, and why the satellite system essentially failed Western Union will be the subject of a later report and analysis.

(* E.F. Johnson Company hs been plagued with problems since aproximately 1974 when the FCC initiated new CB radio rules and the firm, already reeling from the impact of off-shore CB product, found itself with millions of dollars in CB product inventory and no purchasers. Johnson has been a minor supplier of VHF and UHF AM and FM two-way radio transceivers for nearly three decades, but suffered against the likes of Motorola, General Electric and RCA because they all had extensive field-service dealers while Johnson was left to create a new field sales division without the benefit of adequately trained installation and maintenance personnel.)

ORGANIZED 1902

UNITED TELEGRAPH WORKERS

701 East Gude Drive, Rockville, Maryland 20850 • (301) 762-4444
Affiliated with American Federation of Labor and Congress of Industrial Organizations Canadian Labor Congress

RICHARD C. BROCKERT *International President*
REVA M. KOCIOLEK *Int'l Vice President for U.S.*
J. M. CLARKE *Int'l Vice President for Canada*
JERRY GRIM *International Secretary-Treasurer*

International Executive Board
A. D. HAGMANN, *Chairman* • STEVE QUINLAN, *Secretary* • RALEIGH L. BROWN • J. M. CLARKE • ROBERT D. DeVAULT
GERALD MOYER • ROBERT W. REASE • ROBERT SCALES • A. J. SILVA • KENNETH SIMPSON

December 17, 1984

Dear Member:

Enclosed for your ratification is a copy of the 1984 unnumbered Stipulation dated December 14, 1984 which was negotiated by the International Bargaining Committee in connection with Western Union Corporation's financial crisis that surfaced after several banks cancelled a one hundred million dollar credit line on November 20, 1984.

Starting on November 30, 1984, we have been meeting with CWA and Company officials, including Chairman of the Board and President T. Roland Berner, in an attempt to respond to the Company's cash flow problem. Extreme pressure was immediately placed on the Bargaining Committee by Mr. Berner when he asked for incredible concessions, such as 10% in wages, the total elimination of job security (Section 24.02), elimination of protected rates of pay, cutting the severance pay schedule by 50% and reducing the medical coverage substantially and making it into a contributory plan.

As a result of Mr. Berner's mind-boggling request for concessions, it was obvious to both Unions that not only were we in an extremely serious and sensitive situation, but the kind of bargaining involved would not be normal and would necessitate complete knowledge of the corporate accounting system and financial records and, in addition, expertise in the area of negotiating wage investments, rather than concessions. In addition, if our members were going to return a percentage of their wages, as an investment in the Company, we needed the right to have a voice in the decision-making process. The seat on the Board of Directors that was offered by Mr. Berner is not enough.

In view of this, both unions immediately engaged two professional consultants, who were successful in helping the International Association of Machinists turn Eastern Airlines around when they were on the verge of filing for bankruptcy. They promptly advised us that we needed to stabilize the situation to relieve the crisis atmosphere and allow us time to develop a plan to ensure the long-term viability of the Corporation and to establish the principles of equitable and reciprocal sacrifices. That is the intent of the enclosed Stipulation.

As your representatives, we feel strongly that ratification of the Stipulation is in the best interests of all members.

Should the ten percent reduction in pay be voted down, Western Union could possibly end up in bankruptcy, which clearly would not be in the best interests of our members. However, should Western Union end up in bankruptcy court, our members are protected by legislation that Congress passed

SECOND UTW communication to WU member employees noted "(the Western Union) financial crisis surfacing after several banks cancelled a one hundred million dollar credit line (effective November 29, 1984)".

'MY VIEW'

by Peter C. Sutro

Associate Editor/CSD

An Italian friend of mine was reminiscing the other day about his attempts to sell TVRO's in Italy in the early days of satellite television. Since the only source of satellite programming which could be received in Europe on a relatively small antenna was that which emanated from the Ghorizont satellites from the Soviet Union and other Eastern Block countries, it occurred to him that many loyal Italian comrades would like to own a TVRO so they could follow what was happening in Mother Russia. He therefore arranged to have his 10 foot transportable at the "Festa dell'Unita" which is the equivalent of a week-long State Fair with heavy Communist overtones and propaganda. The fair was to take place in Reggio Emilia, the heartland of Italian Com-

munism, and all the Party leaders were scheduled to address the multitudes. A huge projection TV screen was set up and it was arranged through the Soviet Embassy in Rome for special greetings to be uplinked from Moscow to the Italian Faithful. All went according to schedule and all were duly impressed by the technology which could bring Party Secretary Brezhnev into a soccer stadium in the center of Italy.

At the conclusion of the formal greetings, Moscow resumed its normal, monotonous coverage of Soviet life and, soon, my friend sensed a feeling of anger spreading through the crowd. 'It was obvious', the faithful said, that 'this was some sort of capitalist trick and that the images now being projected on the screen were really emanating from an uplink in Western Europe and were the work of the nefarious CIA'. It was not possible, they said, that life in the Soviet Union could be as bleak, boring and awful as that which was being portrayed on the giant screen! How could the "Promised Land" look like "Hell on Earth"? **My friend sold no TVRO's and was lucky to escape a lynching.**

I recount this true story because I recently read, to my dismay, that the Armed Forces Radio and Television Service (AFRTS) plans to encrypt its global feed and make decoders available **only to** U.S. Military and diplomatic personnel living around the world. The AFRTS programming is compiled from the best television fare available from ABC, NBC and CBS plus additional material from PBS, CNN and ESPN. Anyone who has ever tuned into the AFRTS on Satcom 2R, transponder 22, knows that it shows America in the best of lights (including some of the grimmer sides of life) along with sports and entertainment programming of the highest order. In contrast to the Voice of America programming (whose audio only can be heard on a sub-carrier of the German transponder on ECS-1) which is heavily censored and propagandized, AFRTS shows America as a normal, free and healthy country with its share of problems. **And that** is what makes it so valuable in presenting a picture of life here to people from Australia to Greece, from North Africa to Tahiti. And there is great value to America from AFRTS - people all over the world are seeing us in an uncensored, un-propagandized way.

So why is AFRTS scrambling? Not, as one might suppose, because foreign governments are complaining about violations of their air space. Not at all. According to Lt. Col. Larry Pollack, AFRTS Satellite Project Director, the problem comes from the suppliers of the programming who sell some of their product to television stations in the countries which AFRTS covers. They have told AFRTS that it is hurting their sales, and so the service will have to be encrypted or else the programming will be denied to AFRTS! Here we are, providing a wonderful opportunity for tens of thousands of people to get to know America and some CBS executive decides that it is hurting the sale of "Dallas" to Egyptian TV! And remember there is no incremental cost to the tax-payer in supplying this service to non-U.S. personnel; quite the opposite, the encryption will cost **millions of tax-payer dollars**!

A Turkish TVRO dealer told me recently that he is selling 5 meter systems at the rate of 100 each month to Turks in the Istanbul area who want to receive AFRTS. These people, living in the shadow of the Soviet Union, are subjected to artful radio propaganda from Moscow on a 24-hour basis. They choose to spend $10,000 to watch American TV and we are going to take it away from them. **How stupid can we be**?

I call on the Congressional Committees who control the funds for AFRTS to look into this matter immediately and prevent this idiocy from taking place. In fact, pressure should be put from all sides on the program suppliers to provide more and better programming so that AFRTS activates another transponder. The money saved by not encrypting could easily fund this second program for several years to come.

Meanwhile

Nobody denies that the home satellite industry is in

DIAL THIS NUMBER -

305/771-0575

To reach CSD's SCRAMBLE-FAX **HOTLINE!**

24 hours per day, **seven** days per week, you can receive a **free updated report** on the latest happenings in the TVRO 'scrambling world' by calling our **SCRAMBLE-FAX HOTLINE.** When important news breaks, when important announcements are made, you learn first from SCRAMBLE-FAX HOTLINE.

SCRAMBLE-FAX HOTLINE IS A 'between issues updating service' for CSD's highly acclaimed and frequently quoted SCRAMBLE-FAX NEWSLETTER. On the 'Hotline' you will learn about the latest scrambling schedules, where programming services may be 'bought' for the lowest dollar, who is working on the anti-scrambling. News you need to know, when you need to know it. Best of all, it is 'free'; you pay only for your telephone connection.

NOW, if having **all of the relevent facts** concerning scrambling is important to you and your business, you will want to order our SCRAMBLE-FAX NEWSLETTER, and complete information for ordering this newsletter is found to the right.

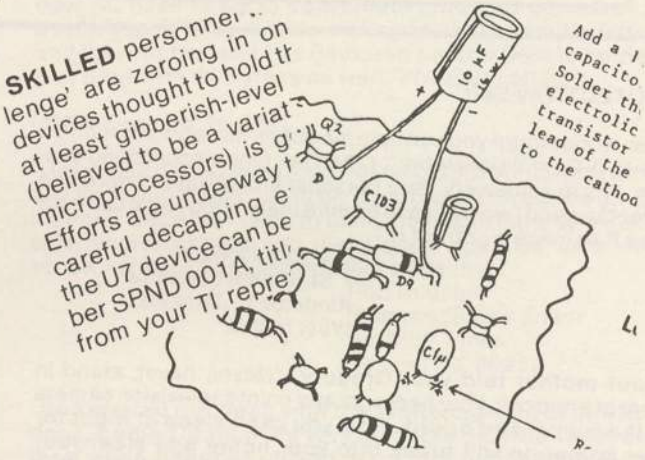
the doldrums; in fact, rigor mortis is setting in. We read a lot of advice about "commercial" areas that a TVRO dealer can step into to take up the slack until the back yard industry recovers. Well-intentioned as these advisors are, I doubt whether the installation of terminals for Federal Express, Equatorial, Merrill Lynch, paging services and the many other business applications of satellite technology being touted will really put much bread on the table for the average rural satellite dealer. However, there is one area which has been largely ignored which could be tackled immediately and which could result in the sale of significant quantities of TVRO equipment. I call the system "mini-SMATV" and it addresses the problem of small, multi-unit complexes such as garden apartments, trailer parks, mobile home parks, small condominiums and apartment houses. These complexes, rural in nature, are often outside the reach of CATV and are uneconomical to wire for conventional SMATV. I propose that these complexes be wired using a series of small (6 to 8 foot diameter) dishes, each dish to serve perhaps 16 dwelling units. The dish would be permanently set on Galaxy I and would be equipped with a dual LNB system so that all 24 transponders could be accessed.

Those residents who wished to become "subscribers" would chip in a pro-rata share of the head-end cost and would then purchase or lease a simple block receiver **and** a de-scrambler. They would then be able to select those encrypted programs of Galaxy I to which they wish to subscribe. If the "subscriber" lived within or adjacent to a cable franchise territory whose CATV company had a plan such as TCI's, then they could take advantage of the bundled plan offered including the renting of the decoder. Even assuming only four "subscribers" sharing one head-end, the cost of such a system would come to under $1,000 each including the decoder. The monthly fee would depend on the programming ordered by each.

This would be a boon to hundreds of thousands, if not millions, of rural and even suburban multi-unit residents who will never have the benefit of cable television service. I recently sent out 75 letters outlining this plan to leaders in our own as well as the CATV and programming industries. To date, I have received enthusiastic endorsement from all quarters. It now remains for the word to spread and for the TVRO dealer to go out and implement it. There's gold in them thar multi-unit complexes!

HARD TO FIND TELEPHONE NUMBERS: Showtime/TMC (800/722-8226 and 800/422-9000). Western Union Vernon Valley uplink (201/764-4021). Western Union Saddle River, NJ (201/825-5000). RCA Vernon Valley uplink (201/827-4065, 827-9400). Captain Midnight (1 of many; 212/246-3811 extension 179). FUN Channel (619/456-1345). Ad-Com/Advanced Communications (305/456-1345). NASA/Washington (202/453-8400). Eutelsat/Europe (33 (1) 45384747); France. M/A-Com Videocipher test arrangements for receivers OEMs (Doug Lindquist 619/457-2340). M/A-Com Cable/Home Group scrambler coordination (Rusty Galbreath 704/324-2200). DeSug/Bob Richardson (716/753-2654). Boresight/Shaun Kenny (201/562-0087). ABC NEWS: NYC (212/887-2973), DC (202/807-7700), Miami (305/448-9036). NBC News: NYC (212/664-4148), DC (202/885-5025). USA Today (news 800/368-3024). UPI: Miami (305/358-8860). CNN: Miami (305/947-9016).

SEND $10 -
TO: CSD SCRAMBLE-FAX
P.O. Box 100858, Fort Lauderdale, Fl. 33310



AND we will send you the latest issue of our **SCRAMBLE-FAX** NEWSLETTER. Airmail. Promptly. Inside you will find the latest material on who is scrambling, using which system. Which receivers are compatible with Videocipher, and which versions of Videocipher. Who is working on 'breaking Videocipher', and their progress to date. Where you can buy programming services for less, and how much. Which distributors are offering dealer assistance with Videocipher and software sales, and how it works. How cable retailers are selling scrambled program services, sales results to date.

SCRAMBLE-FAX is published at 8 to 10 week intervals; you order and pay for only the current issue and are under no obligation to order additional issues. Each issue is 'complete' and updated with the latest information from the scrambling world. SCRAMBLE-FAX **NEWSLETTER** is a one-stop, full reference to what is happening in scrambling, who the players are, and how their efforts are bringing results. SCRAMBLE-FAX NEWSLETTER... created by Bob Cooper and CSD to keep you informed.

INDUSTRY AT LARGE

CORRESPONDENCE, NOTES, REBUTTALS AND CHARGES . . .

CSD provides this industry 'forum' for the purpose of allowing members of the industry to comment on industry activities. CSD assumes no legal responsibility for statements made here and those providing such communications are held liable for their statements directly.

PROTECT Thy-Self

I am wondering if you can help me obtain more information on the M/A-Com Videocipher or the Oak Orion scrambling system. I have some very, very personal and private material on videotape and I would like to be sure that nobody else can ever view it or make a copy of it.

Gregory Ffolkes
7 St. Michael Terrace
Kingston 6, Jamaica
West Indies

Your mother told you, Gregory, "Never, never, stand in front of a mirror in your bedroom and point a television camera at the mirror". **Not bright. Now you can't sleep at night for fear someone will break into your home and steal your tape and view your most private, personal moments. Hey M/A-Com . . . once again you missed a big, viable market. The world is filled with Gregory Ffolkes who want to 'protect' their 'ass-ets' with some form of private, personal scrambling system. Why are you fooling around selling perhaps a hundred thousand descramblers when there is a much bigger market out there??? This sounds like a special assignment for Jim Bunker.**

SEND HBO A Bill

I have made up my own invoices and sent them to HBO, MTV and CNN. I have invoiced each for $25 and up because I figure they are utilizing my personal property for their own profit. These clowns are 'parking' their microwave satellite signals in my yard, on my lawn, in my driveway, and on my buildings. They have never asked me for my permission to do this, and they are trying to make money by parking on my property. Don't they want fees from me to use their signals? Are those signals not parked on my property, and without my permission???

I figure $25 a year for CNN is just about right. I use the same logic as they used when they decided I should pay them $25 a year to watch CNN and CNN Headline. If their programming is worth $25 a year to me (so they say) then they should be just as willing to pay me $25 a year to 'park' their signals on my property. Naturally I adjusted HBO's bill accordingly.

My logic continues. Where in the United States would you drive into a parking lot and then ask the parking lot attendant **to pay you** for the right to park your car? Would you drive into a neighbors yard and ask him to **pay you** for parking there? Of course not!

In my invoice to CNN, I stated:

"Our enclosed billing is for Parking of microwave signal via satellite (CNN) **on property presently leased by Wawasee Electronics Co., Inc. for the period January through December 1986. Our parking fee is $25 per year for CNN Headline News. Our terms are 30 days to credited accounts; we have extended the privilege of open account status to CNN . . ."**

Who says there is no justice in this world; as you can see by the enclosed copy of check number 075380, Turner Broadcasting System, Inc. paid the invoice. All $25 of it. Naturally I suggest all other TVRO dish owners do the same thing.

Richard Maresh, President
Wawasee Electronics
P.O. Box 36
Syracuse, Indiana 46567

TURNER BROADCASTING SYSTEM INC Atlanta Georgia 30309 075380

INVOICE DATE	INVOICE NUMBER	REFERENCE	NET AMOUNT
04/04/86	7018		25.00
	075380	VENDOR NO. W130 BK TOTAL ▶	25.00

DETACH AND RETAIN FOR YOUR RECORDS

Turner Broadcasting System, inc.
ATLANTA, GEORGIA 30309
CABLE NEWS NETWORK
CHECK NO. 075380
62-26 / 311 721-09
CHECK AMOUNT
DATE 05/16/86 PAY **********25 00 Cents **********25.00
PAY TO THE ORDER OF WAWASSEE ELECTRONICS CO., INC. P.O. BOX 36 SYRACUSE, IN. 46567
BY
BY
⑈00075380⑈-⑆031100267⑆ 6301400721 509⑈

Creative. And now we know why Ted Turner is losing millions of dollars each year; his accounts payable department is being run by Billie Sol Estees.

GREED, Hunger and Politics

We in the home dish industry are faced with the biggest battle of our corporate and individual business lives. TVRO is in danger of being swallowed by a VERY HUNGRY and GREEDY monolith consisting of the NCTA, Time/Life, Inc., Viacom and others. This is one time that we cannot sit back and 'let George do it'.

Leaders of our young and vital industry must take it upon themselves to become individually active in the scrambling fight. Manufacturers, distributors, trade publications, dealers and consumers cannot depend upon any one organization (such as SPACE) to carry our banner and lead us out of the scrambling woods. SPACE is struggling and needs the support of everyone in the industry but if we expect to win this bat-

tle, every single individual involved in TVRO needs to voice him or herself over and over again at every possible forum.

In particular, individual TVRO owners must become more involved. I know the feelings of many of my customers; they are angry, frustrated, confused and feeling down right helpless. I cannot blame them one bit because this is probably the first time the majority of them have been personally faced with a complex situation involving different aspects of trade laws, constitutional questions, anti-trust law, big business and so on. We all feel like butterflies caught in a spider's web.

As a dealer, I have been able to mobilize my customers and even TVRO owners who did not purchase their initial system from me by doing several things. I'll list some of the more effective efforts we have put into play:

1) **Hold scrambling seminars**; explain what is happening, stick to the facts, and leave the emotion to the customers.
2) **Routinely issue single sheets of paper** listing the latest scrambling facts, who is on our side, who is not; where service can be obtained, and what is costs. Make sure you have your information correct, and again, stick to the facts. No emotionalism should be shown here.
3) **Provide education so the customers** can create their own letters to Congress and the programmers. There are several additional bits of advice here:
   A) Do NOT tell them WHAT to say; just give the facts and put it in readable form so they can in turn frame their own letters. Duplicate letters with varying signatures are counter productive and earn a 'circular file' spot in the Congressman's office.
   B) If your customers have difficulty writing letters, take the time to sit down and help them out. **This is the best investment you can make** and it will not only help produce better letters, but it will also make you and your customers far closer together. Indirectly, this is 'good PR' for your satellite business and this will help your customers recommend you to others.
   C) Try to steer the customers away from hysterics in the letters. Calling names, going off the deep end and damning everyone in sight will not get a favorable reaction at the Congressman's office.
   D) If their handwriting is not legible, **offer to type the letter for them**. Again, ten minutes invested typing a letter is the best PR you can get for your firm. And help them with their spelling too (**sat**telite is NOT how we spell it!).
   E) Make yourself available, by telephone, at **all hours**. We are in a service business; we should be responsive to their needs and questions at ALL hours.

This does work. We have already seen a marked change in the 'replies' being received in this part of the country from Congressional offices. Remember that form letters earn 'form replies' while customized letters must be read and then answered individually. When you force a Congressional aid to **research** his answer to a letter, you create an educational process. As the aides do research, ask questions, and compose an answer for the Congressman's consideration, there is a constant upgrading of awareness. This is good and it works.

I am sorry to say that most dealers have not come to grips with the reality of this very political situation. Sending off one postcard **and quitting** is not an effective way to combat the hundreds of thousands of dollars being spent monthly by the cable interests. This process has to keep up and build bigger and bigger until we win this battle. We have the nucleus for a very significant 'grass roots reaction' here; more than a million homes, in rural areas, all voicing the same fears and concerns. Our failure is that we have not coordinated our efforts, we have not gotten together to fight this battle, and we have allowed ourselves to be fractionalized and split apart by the better coordinated cable interests.

Our efforts are now expanding; letter writing campaigns to national advertisers, as much local press publicity as we can manage (invite the newspapers and other media to your local 'scrambling seminars'!) and some 'marketing' of our own; bumper stickers are now being distributed which read 'SCRAMBLE EGGS/ Not TV!'.

Misty Talmadge
710 Roosevelt
Loveland, Colorado 80537

Exceptionally well done. Misty's telephone number is 303/669-0883 (after 5:30 PM MDT, 303/667-8559). **They are offering to share the** 'SCRAMBLE EGGS/ Not TV!' **bumper stickers with other dealers for a very reasonable price** (101 are $.59 each) **and will charge it to your Mastercharge, VISA or American Express card. Beyond the cuteness of the bumper sticker, there is a real commitment here on the part of these Colorado dealers to fight the scrambling problem as it must be fought. This sort of effort should have been mounted by a national group; it was not, and now we have to try to coordinate amongst ourselves as best we can. Misty is also willing to share sample letters and information she has gathered on how best to contact and deal with Congress as well. Write or call her.**

LOOK Forward To CSD

I want you to know that I enjoy reading CSD. Ironically, it is the one trade publication I actually look forward to receiving. I say it's ironic because I used to think the magazine was unreadable, unprofessional and that Coop's opinions were nonsense. I guess I have learned alot since then!

Ron Rudolph
(Former) Senior Editor
Satellite Times
Denver, Co. 80222

Ron started out fresh with the Wolford group of publications, helped launch the very readable Satellite Times **and then when finances closed in on that publication found himself without a job. Give us a call, Ron.**

TVRO In Chile

I live in Chile and work at a US astronomical observatory. The advent of satellite television has been a great boon to us as now we can receive news and sports live from the USA on the AFRTS transponder (#24) from Intelsat at 1 degree west. We use a locally built 8 meter dish. However, the advent of scrambling is giving this crew of American scientists the shivers. Why in the world would they stick us almost to the south pole and then cut us off from US news? AFRTS has announced they will begin scrambling this (and other) feeds late this year. But they have not announced the scrambling system. On the chance that it may turn out to be Videocipher, we are following the progress in breaking Videocipher with great interest. If AFRTS uses a simplistic system we worry not; there are plenty of competent engineers here on assignment and I think we can bust anything they throw at us. But the Videocipher system is, by all reports, another ball game altogether. We are watching, and reading, and praying. Please keep us informed.

Tom Ingerson
Cerro-Tololo Inter-American
Observatory
Chile

AFRTS should announce soon their scrambling system. Although your observatory is not a US military **installation, and technically you would not qualify for a descrambler, logic suggests that** Senator Barry Goldwater's **office might help since your headquarters is back at the Kitt Peak National Observatory and you operate under contract with the National Science Foundation. Write some letters, create a stink, and if all else fails, watch Videocipher crumble to the earth like a giant meteor burning up in the lower atmosphere before the end of the year.**

AFRTS In Spain

I am a naval officer stationed near Madrid, Spain. Is it possible for us to have a dish to pick up US news and sporting events? The local Air Force base brings in some American events such as NFL football games via a special feed from the Spanish TV network but it is available only on closed circuit system here at the base.

Commander Gordon G.
Barnett, USN
Box 4867
APO New York, NY 09283

No problema. Just whip up an 8 meter dish like the guys at Cerro-Tololo Inter-American Observatory (their US address is P.O. Box 26732, Tucson, Arizona 85726) and equip it with a good grade of receiver (anything that claims an 8 dB threshold and can be manually rather than electronically tuned) **and you are in business. Until AFRTS scrambles; then you'll have the same problem as Tom Ingerson in Chile.** (It does make you wonder how many thousands of Americans, stuck 'overseas' for whatever reason, have invested in their own dishes to watch AFRTS. One also has to ponder how many 'Commanders' and 'scientists' are going to be hopping mad and ready to deck the first AFRTS person they run into, after AFRTS does this dumb thing.)

TRANSPONDER WATCH

RECENT REPORTS OF ACTIVITY ON DOMESTIC / INTERNATIONAL SATELLITES

Send your reports to CSD Transponder Watch, P.O. Box 100858, Ft. Lauderdale, FL 33310. For late news, call (305) 771-0505.

CALIFORNIA Amplifier is alive and well; reports that the firm has suspended operations are not true and business is as usual. Some corporate reorganization did take place, possibly leading to the false reports.

MORELOS update possible during Mexico City Satellite Conference and Exhibition scheduled for Mexico City September 22-23. Sponsor is Latcom and information from 213/837-2456.

AMWAY, national distributor of home products, has restarted home TVRO system sales program by contracting with California based Digitron Communications to provide nationwide installs. Amway utilizing receiver design picked up from Intersat (now produced by firm called Rexnord Automation), antennas from Winegard, feeds from Chaparral. System ASR-2000 has consumer list of $2,995 and is being first test marketed in Michigan. Digitron actively recruiting field installers to work in program and promises to pay 'top dollar' for field install expertise.

PHOENIX Cable/Lease, a Georgia leasing corporation, offering VC2000 descramblers on lease plan. User/dealer sends $40 and completed application form and promises to pay $20 for 24 months thereafter. VC2000 units coming from Toner Cable Equipment, long established wholesaler of cable TV hardware in Pennsylvania. Information from 415/485-4500.

GI/General Instruments has acquired M/A-Com Cable Home Communications Group (see Coop's Comments, this issue) for $220M. Included are VC2000 home descramblers but not cable grade VC2 descramblers nor LinkAbit uplink encryption equipment. GI is major supplier of cable TV set top converters and master plan may include eventual transmission of cable premium programming (such as HBO) directly into home in scrambled mode allowing new version of set top decoders to unscramble.

CAPTAIN Midnight has been formally sentenced (August 26) by Federal judge, fined $5,000 and loss of his amateur radio license for one year period. John MacDougal, aka Captain Midnight, has attracted large group of followers who have pledged to raise funds to help him defray his legal costs associated with incident.

FCC has announced plans to study formal proposal to require all uplink transmitters to have automatic ID (identification) coding as part of transmission. FCC talked of similar requirement for land-mobile and other terrestrial radio services some years ago; nothing came of proposal because cost to implement would have been astronomical. With smaller 'universe' of uplink transmitters and large dollar cost of uplinks, relatively minor problems are foreseen implementing plan for uplinkers. Commission views automatic transmitter identification as important element to preventing future Captain Midnight type incidents.

US NAVY will wait longer for next launch of communications satellite using Atlas-Centaur rocket launch system. Faulty electronic components in the same batch as those used in the launcher system delayed planned August 28th launch. At present, all launchers of satellites aboard any launch vehicle very 'skittish' about potential failures.

FORD AEROSPACE, FCC approved builder of hybrid C/Ku band domestic satellite system, may be handing back permit to build and launch satellites. Firm was among ten approved in July 1985 to launch new birds. Ford cites slowdown in shuttle and other launch schedules, astronomical rise in insurance rates, and slowness in attracting potential customers as primary reasons for possible abandonment of satellite plans.

NORTH America 1 is reactivated with new owners; network is attempting to provide partial day contract broadcast services to radio stations, has goal of serving 50 affiliate stations by end of year. Uplink is out of Salt Lake City on TR18 of Telstar 303, 5.94 MHz subcarrier. Behind the effort are former management people from Kaul-Tronics where programming is now created.

SENATE hearings occurring just after our August CSD deadline proved lively but probably meaningless for early solution to TVRO problems. C-SPAN aired taped excerpts

SUBSCRIBE TO COOP'S

and receive $25 Green Sheets Ad Free!

3 months.....$20.00 (*)
12 months...$60.00 (*)

HERE's the offer: take out either a 3-month-trial subscription to Coop's Satellite Digest ($20) or a full year subscription ($60) and you automatically qualify for a **FREE** classified advertisement in the CSD GREEN SHEETS; a $25 value!

Mail-off your subscription order with check or money order enclosed, **or** have your VISA or Mastercharge card handy and telephone **305/771-0505** any weekday between 9 AM and 4 PM eastern. You are not required to use your Green Sheet classified listing at this time (it may be used anytime during your subscription period) but a form appears below (120 dashed lines for a maximum of 120 letters, numbers and spaces; see page 20D this issue) should you wish to do so.

*/ Rates valid where US zip codes apply only; in Canada and Mexico, $65 in US funds for 12 months only. Elsewhere, $75 in US funds only.

☐ **ENTER** my 3 month trial at $20.
☐ **ENTER** my 12 month subscription at $60.

NAME _____

COMPANY _____

ADDRESS _____

TOWN/CITY _____ STATE _____ Zip _____

AND... Your FREE 'Green Sheet' Ad

RETURN TO: CSD MAGAZINE, P.O. Box 100858, Fort Lauderdale, Florida 33310 Telephone 305/771-0505

early Saturday morning following hearings and bottom line was that only Senators Gore and Pressler seemed disposed to do something 'this year'; balance voting to wait until next session of Senate, convening after first of year.

US DEPARTMENT of Defense plans $2.6**B** expenditure effort to launch military satellites. DOD typically launches 20 or more satellites per year, and with Shuttle down and other launch systems wounded, there could be as many as 30 satellites backlogged when the system restarts. Some Titan launchers are 'in stock' but many new ones will be required, restarting business at firms such as McDonnell Douglas, Martin Marietta and General Dynamics. DOD has talked with European Ariane launch service about lofting critical US defense satellites before Shuttle or new Titan program can come on line. Another potential provider of launch services could be Hughes, with help of parent General Motors, starting off with Boeing's Saturn V launch vehicle and then modifying it for satellite launch purposes. Hughes has shown an interest in creating a launch facility someplace in the Pacific Ocean.

FM AMERICA host Keith Lamonica has filed petition with FCC asking Commission to adopt a single scrambling hardware system as a 'standard' for TV encryption. Lamonica believes adoption of a single standard "will encourage manufactures of TVRO equipment to manufacture in volume the equipment necessary to ensure the long term viability of the TVRO market."

COMB, a major discount retailer distributing nearly 2M catalogs to American consumers every 60 days has sold around 40% of its 5,000 KLM Skyeye 10 receiver systems (with 11 foot dishes) at $995 price first advertised in March. COMB is now planning to drop price to $695 to clear out the balance in inventory. Buyers do their own installation, and a surprising 5% have come back to an appointed center to order second receivers for their home systems.

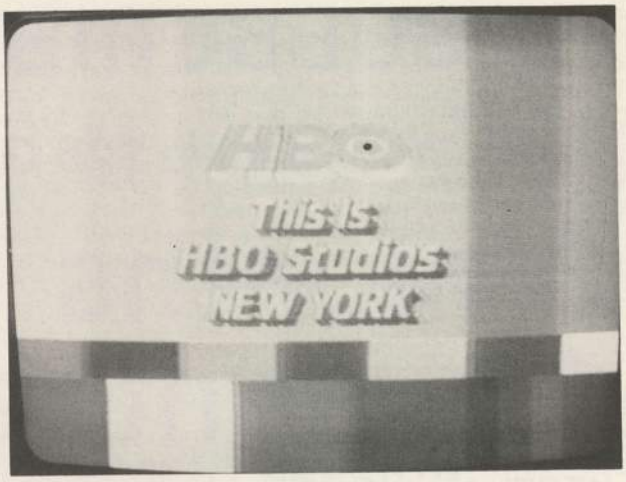
INDIA has dumped the Shuttle in favor of an Ariane launch position early in 1988 for their INSAT 1C bird. Failure of the Shuttle to be able to provide a flight when India needed it, or within year of cancelled initial flight date, caused them to go to Europe for launch service.

EUROPEAN DBS activities will stagnate until Ariane and Shuttle launches are back operating normally according to recent European study. French TDF-1 satellite with 4 channels (two in French, one in English, one in German). Both will be first 'superpower' (230 watt per transponder) satellites to attempt regular operation. Privately owned Astra, a 16 channel satellite built by RCA with 45 watts per transponder, will be operated similar to Galaxy 1 in North America; transponders leased by anyone with the bucks to pay. All three birds plus Scandinavian Tele-X satellite scheduled for late 1987 now appear to be put back by year or more making 1986 and most of 1987 a 'coasting period' for the growth of European TVRO and SMATV.

RCA is not concerned that they will have to wait until sometime in the first half of 1989 to launch K(u)-3. RCA and HBO have completed formal written contracts now for Ku-3 which HBO continues to insist will be dedicated to 16 channels of cable programming, all scrambled, and only available to cable systems (ie. not private TVRO).

RCA has been granted a patent for a 'satellite video scrambling system' which RCA describes as a 'laboratory experiment'. The scrambling system patent application was filed late in 1983, and RCA denies there is any connection between the new patent and their contract with HBO to co-operate Ku-3.

SMALL CABLE television operators, members of 'CATA' (Community Antenna Television Association), are upset with Showtime attitude concerning resale of Showtime and The Movie Channel to dish owners in cable areas. Showtime has decided that the cable operator can only represent and sell Show/TMC to home dish owners if the cable system has operational cable plant in front of 50% of the homes in the franchise area. Some cable operators have county franchises, but only serve with cable service pockets located



where traditional cable technology can be applied. Showtime now says that if the cable operator does not pass by 50% of all homes in his franchise are, he cannot sell Show/TMC to dish owners in that county; they must deal directly with Show/TMC to place orders.

TO INTRODUCE the advantage of Ku band delivery for program syndicators and distributors, Hubbard Broadcasting has made available free transponder time (during August) to allow programming sources to reach the more than 675 TV stations Hubbard claims are now equipped with Ku band dishes.

EQUATORIAL Communications, the California firm with the high profile business success in selling and delivering very small satellite terminals for transmission and reception of spread spectrum data communications, lost $3.5M in the most recent quarter. The firm blames the loss, in spite of $13.9M in sales, on reduced interest in C band terminals and the sudden increase in Ku band systems which have been established by firms competing with Equatorial.

BAHAMAS will have the first 'sub-standard-size' Intelsat terminal graded as 'A'. Intelsat qualifies terminals on antenna size plus operating performance. The 18.3 meter dish system being installed now, to interconnect The Bahamas to an expanded Intelsat network, is the product of GTE Government Systems.

TELEGRAPH business declined over period 1975-1984 according to FCC, while all other forms of communications increased. Telephone company revenues in particular have increased at super-rate; from $590M for major carriers (including AT&T) in 1975 to over $1.8**B** in 1984. AT&T had revenues of $1.7**B** or 96% share of market in 1984. 'Breaking up is hard to do'.

NAIROBI, Kenya is location for African Telecom '86 Conference September 16-23 (seven wonderful days in Kenya!); information (022) 99-52-44 in Geneva, Switzerland.

WESTERN UNION has completed agreement with firm called Unilease Aerospace that transfers ownership of Westar birds to new corporation jointly owned by two firms. WU engineering, marketing and operational groups going to new corporation. WU has been struggling to stay alive after very large losses; sale of satellite assets and then lease back from new corporation will help.

PHIL DONAHUE show is now being transmitted live to approximately 90% of stations carrying broadcast although many tape it for later scheduled air play. Program originates in New York City goes to Westar 5 (TR15) from Staten Island Teleport uplink facility weekdays 9 AM eastern.

M/A-Com financial planning: firm has voted in plan to prevent 'hostile takeovers' (defined as attempt by outside group to acquire majority voting control in corporation against wishes of present Board).

COOP/ Continued from page 5

equipment to thieves; 4 VCR units disappeared from the 'B' or upper floor exhibit hall. There were several amusing incidents involving show security; one fellow attempted entry by wearing his badge from the November 1982 Atlanta show! Oh yes, the show badges are likely to have a brand new look for Las Vegas.

One disturbing number I found came from the USS/Maspro booth where they reported a survey of the business cards received indicated new people asking to be placed on USS mailing lists ran more than 80% from people and firms within a 200 mile radius of Nashville. This trend was especially high on Monday (day-one) with a slight expansion of the 'attendee base' the last two days of the show.

Some interesting products and services we found in Nashville which you may wish to pursue:

1) Rent-a-Dish (906/475-7817) offers an equipment package that allows consumers to try TVRO on a day to day basis for as long as they wish before buying. Mike Bires of Nova Antenna Systems (a dealer in Youngstown, Ohio) reports he uses dish rental to 'save sales' for those 20% of his retail customers who cannot meet the credit standards of his local band or finance company.

2) Maxi-Rotor (813/888-6091) had their Ku band polarization rotation feed in operation. This feed was

ALL INSIDE the television set. Anderson Scientific **displayed** 'Dacotah' **line of receivers offering full VHF, UHF plus satellite reception in one container. Battery operated models are also available.**

impressive at the Brighton, England show in July (see **CSD** for August 15th) and is priced in the $45/$55 region to dealers.

3) EMC at 800/336-7506 brings two former people from KLM/Draco together in a new business designed

NASHVILLE HIGHLIGHTS

Houston Tracker hopes to beat the competition to the dealer showrooms with 'IRD' receiver/decoder combinations and an October target date. Their **'System VIII'** plans to sell with a suggested consumer price of $1,400 including Videocipher module, HTS actuator arm and HTS LNB. Unit is top-of-line with 99 channels of memory for both audio and video, built-in C/Ku switching, and one or two dish inputs (C and Ku). **M/A-Com's model 2500R** plans production start on their IRD unit by late November and shipments in December. No pricing yet, but distribution only through authorized distributors and dealers. **Channel Master**, which claims to be building Videocipher modules, has no announced marketing plans, no pricing but hopes to have their IRD receivers available for shipment within the 1st 90 days of 1987.

SHOWTIME announced a 'basic dish programming' plan covering "about 10 basic program services" for $10 a month. Showtime or The Movie Channel are extra, **over and above** the 'basic service package. This will be done through a new subsidiary called Satellite Direct. Showtime also announced a new TVRO 'advisory board' which will consist of perhaps 10 people from the distributor and dealer side of this business.

The **Nostalgia Channel** and FutureSat Industries announced an unusual plan; they will give away 10,000 descramblers to the first 10,000 home dish owners who sign up as members of a new 'Nostalgia Fan Club'. Cost of signing up is $39.95 for the first year so that seems like a good trade for a "free descrambler'. However, they have no particular decoder selected yet, and no firm date in mind to scramble. You might be sending them $39.95 for nothing more than a fan club certificate.

Scientific-Atlanta will gift the consumer with a free year of the CNN package when they purchase any S/A product. With each complete/total S/A system, the consumer receives a VC2000 descrambler for the reduced price of $279 (including $20 rebate from Anixter). This deal is presently scheduled through November 1st.

FIRST RUN/ The TVRO Movie Service is a new pay-per-view Sony encrypted home dish package scheduled to begin September 19 at 8 PM (Spacenet 1, transponder 9). Movies are being released at the same time as they appear in VCR stores and cost typically $5 to $6 per movie. This is a Friday/Saturday/Sunday night service only and movies appearing soon include 'The Highlander', 'White Nights', 'Iron Eagle', 'FX', 'Murphy's Romance' and others. The consumer has to lay down $159 to cover the annual membership fee plus the deposit on the Sony decoder (800/523-7150).

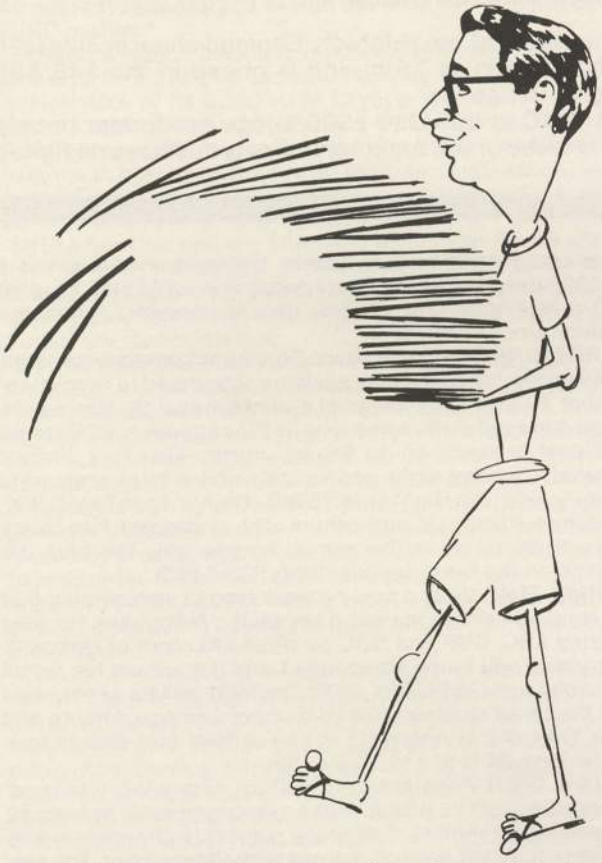
PRIME-TIME 24 is a new network type of service aimed at the rural home dish market. They plan a November 1st start offering ABC, CBS and NBC on three channels of Galaxy 3. Encryption will be by Videocipher and the annual fee for all three channels is $49.95. An 800 number will be announced and the three channels will come from Chicago, Atlanta and New York. D & H Antennas is one of their first distributors. Prime-Time 24 is at 212/725-1132.

HOME DISH Programming will air a 'preview weekend' September 20/21 on Spacenet 1, transponder 23, between 9 AM and 1 AM (central). This group plans four channels at $95 per year, they will encrypt, but **not with** Videocipher. The preview weekend will not be encrypted and Tom Kennedy of 'The Price Is Right' will host the weekend.

M/A-Com is transmitting an unscrambled 60 minute videotape on Westar 5, transponder 22, between 4:30 and 5:30 PM eastern between September 15th and 20th, and then once per week thereafter. The program is designed to allow TVRO dealers to hold 'Satellite Nights' as selling tools for their local areas. The program features statements by many representatives from Showtime, TBS, MPAA, TCI, HBO and SPACE.

WE DIDN'T THROW THEM ALL AWAY - But, We Came Close!

To restart CSD from Fort Lauderdale, we needed more room. So we emptied a store room where old, musty copies of CSD had been collecting dust for years. It took five station wagon loads to clear out the needed office space. We saved only a small handful of each of the older issues still in stock. We offer them for sale on a first-come, first-served basis.



$10 will buy a single copy of any issue listed. Including the fabulous October 1984 **'FIFTH BIRTHDAY ISSUE'** of CSD which retells the full TVRO story in historical perspective. OH yes, for $25 you can have a copy of **CSD Anthology Volume One,** the entire 12 issue set of the first year of CSD and our industry (over 450 pages!).

To order, call 305/771-0505 weekdays 9 AM to 4 PM eastern with your VISA or Mastercharge card handy. Or, send payment with order to CSD Magazine, P.O. Box 100858, Fort Lauderdale, Fl. 33310. Prices include shipping to you.

1982: April (Bringing TVRO To Africa, Test Results F4, Test Results W4, Video demod Design). **August** (TVRO Video Processing, LNA Basics). **October** (Selling Motels/Hotels, Receiver Basics). **November** (2010: Arthur C. Clarke, How SCPC Works, Low Power Rebroadcasting). **December** (Atlanta Show Report, Figure 8 Curve - Birkill, South African TVRO, Australia's Domsats, Polar Mount Drives).

1983: April (Hardware Failures, Harris Delta Gain, Paraclipse 12' Review, ADM 20' Review, BDC Techniques). **November** (Apple Tracks Molniya, Solar Heating With Dish, Antenna Testing Techniques, European CAST 83 Report). **December** (Testing TVRO Feeds, ADM 11 Foot Review, SDS/Rebroadcasting Broadband Satellite TV signals).

1984: February (SMATV Headends-Part 1, Pioneer Satellite TV Programmers-Gone, Testing TVRO Feeds-Part 3). **March** (SMATV Engineering-Part 2, Testing Feeds-4, Draco Dish Control Package, Hero 13' Review, USS-Maspro SR2). **April** (Teletext Techniques, SMATV Plants-Part 3, Arthur C. Clarke Indian Ocean Observations). **May** (Tweeking-The Art Of Being Good, 1984 Industry Equipment Survey, Canada Attacks SMATV, South America Domestics, SMATV Plants-4, SCPC). **June** (Dish Mounts, SMATV Plants-5, How To Attend A Show, Re-Visiting Rebroadcasting, SCPC). **August** (TVRO Receiver Design, Canada's Regulatory Problems, SMATV Engineering-6, DOMSATs Offshore-Puddles, Pioneer Taggart, TVRO Mounts-2, SCPC). **September** (Paraclipse 16' Review, RF Receiver Designs, Channel Master Microbeam, SMATV Plants-7, Pioneer Brown). **November** (Gunnplexer Microwave, LNA Gain Squabble, Pioneers Howard/Baker, Canadian TVRO, SCPC, Birds at 53 and 50 West). **December** (Luxor After The Fallout, Year End Dealer Survey, Pioneer Brough, Arthur C. Meets The Pope, Making Molniya Friendly, SMATV Design/BDCs, Low Cost Quick Mount).

1985: January (Man Of Year-Brown, Cosmos Receiver Test, McCullough Receiver Test, Luxor's Marketing Back-Up, Pioneer Ramsey). **February** (Small Antenna Challenge, New Signal Source Testing, Ranger Mesh Antenna Review, Signal Level Meter Tip, Pioneer Clarke, Canadian Report, Scanning Eastern Sky). **March** (Ecuador's TVRO Industry, LNA + Downconverter Evaluation Techniques, Astro Pro Z-500 Review, Genesis-10 Mesh Review, Computer Program Tips). **April** (Receiver Specs/What They Mean, SMATV Report, Aristocom XL-12 Mesh Review, Curing TI With Better Receivers, Consumer Awareness Report, Videocipher II Test Results). **May** (SMATV-CTN Network, Half-Galaxy Theory, Descrambler Interfacing, Costa Rican TVRO, IQ-160 + Omni Solution). **June** (TVRO Industry Consumer Market Profile, Off-Set Fed Antennas, Scrambling Specifications, Receiver Audio Specs). **July** (M/A-Com's Bunker Talks Back, TVRO Comes To UK, High Voltage Line Interference, '20/20' TV Program Good). **August** (Best of Japan-Part 1, BDC Distribution-Part 2, Surge Protection, Squawker and Tweaker Reviews, Superwinch 2010 Drive-Controller Review). **September** (Sharing BDC Without Cable, TVRO Economics, Japan's Best-DX-DSB700, Gensat CDR4/12 Review).

1986: January (State Of The Industry, European TVRO Update, Analyzing Analyzers-4, Hurricane Kate Damage Test, Jamaican 7 Meter Dish Construction-2). **February** (Starting Over With BDC, Jamaican 7 Meter-3, Science of Scrambling, Broadcaster Myth, Converting to 12 GHz). **June** (Captain Midnight, Peter Sutro Equation, WTBS To Market CNN, Antenna Basics-3).

SPECIAL ISSUE: The October 1984 issue contains nearly 200 pages tracing the full history of TVRO from before TVRO through its 'fifth official birthday'. This is a complete history with more than 100 rare photos and documents that created this industry.

to provide 48 hour turnaround for broken equipment. **Edward Parkhurst** and **Ken Mac Clenaghan** are located in Wisconsin and report 240 pieces of equipment went through their shop the first month of operation.

4) Anderson Scientific (605/341-3781) had a sleeper product which somehow escaped detection by many show attendees. Their 'Dacotah' series of color TV sets have the satellite receiver built-**into** the TV sets. The TV sets are available in mid-screen and 5 inch (color) versions with the latter size being AC **and** (12 volt) DC operated. The beauty of all of this is that all external signs, wires, and physical sizing of separate TVRO receiver units are eliminated. The sets have on-screen tuning assistance so the user knows which transponder he is tuned to, built-in A and B switching for dual feed systems. The present models are 400-900 MHz block designed but 950-1450 MHz block is coming. The surprise was the price; in the $350 region for a complete color TV set **and** TVRO receiver.

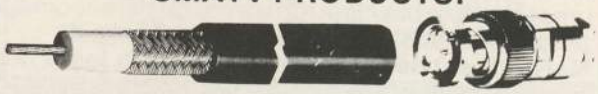
FCC Study

The Federal Communications Commission has 'opened' a formal study (they call it an 'inquiry' in FCC parlance) into the multitude of problems facing home dish users. The concept is good but unfortunately the Chairman of the FCC is already on record believing that **nothing should be done**, at this time; he feels the problems will sort themselves out without any FCC intervention.

The inquiry is supposed to be completed by the end of this calendar year. There are pressures from Congress in this area and it is likely that, indeed, it will be ready for submission back to Congress sometime early in 1987. Here is what the Commission is looking into:

1) **Pricing and availability.** They want to know how the programming is priced, what methods are in use by the programmers to establish pricing to home dish owners, and whether the program pricing and the limited availability of places to buy the programming is adversely affecting the growth of TVRO.
2) **Decoder availability and decoder standards.** They want to know whether the public is reluctant to buy decoders because the public worries they may need two or more decoders (should more than one decoder system be placed into use). They are asking a sub-question; should they (the FCC) create a 'decoder standard' and mandate by regulation (law) that every programmer use the same scrambling system?
3) **Who will scramble, when.** They want to create a record that shows when all of the services planning to scramble will, indeed scramble. They also want to know how each such service plans to sell their service to home dish owners, for how much, and how many program channels can be ordered from a single source (with a single telephone call).
4) **Competition.** They want to determine how much competition there now is, and how much there is likely to be in the future, between programming sources selling programming. Here they want to see if there are monopoly trends in the programming distribution, and whether there is enough of a 'free marketplace' to allow competition to drive down

IMMEDIATE DELIVERY
FROM STOCK ON OVER 900 CABLE, CONNECTOR & SMATV PRODUCTS!



WIRE & CABLE
- Coaxial/RG
- Cable Assemblies
- Multiconductor
- Plenum/Teflon (NEC 725, 760, 800)
- Alarm
- Computer/Low-Cap
- Telephone
- Hardline
- Satellite Control

CONNECTORS
- Type N
- Type C, LC
- BNC
- TNC
- SMA
- Type F
- UHF
- Twinaxial
- D subminiature
- Crimp/Solder

SMATV
- Modulators
- Distribution Amps
- Taps
- Splitters
- Switches
- Transformers
- Trunkline
- Traps
- Jumper Cables

ACCESSORIES
• Crimping Tools • Test Equipment • Coax Seal
• Power Filters • Cable Ties • Shrink Tubing

COMPLETE LINES
Amphenol, Kings, Columbia, Cablewave
B&K, Tyton, Blonder-Tongue, Coleflex

ORDER TOLL-FREE
Nationwide: 1-800-327-5999
Florida: 1-800-52-CABLE / Telex: 532362

NEMAL ELECTRONICS INTERNATIONAL
12240 N.E. 14th Avenue
N. Miami, FL 33161 (305) 893-3924

IT'S NOT JUST WHAT WE MAKE
IT'S WHAT WE KNOW

We design and manufacture high quality commercial duty mounts for all reflectors, 2 foot to 30 foot.

--Fixed or Tracking
--Az-El, Polar, X-Y, or X-Y-Z
--Choice of finish, including Hot Dip Galvanizing
--Commercial grade roof mounts
--Any custom fabrication
--Paraclipse, S-A, Anixter, L.P.,
--Many others

We will build to your specification, or develop a specification and a mount that meets your needs, whether a commercial installer or dish manufacturer. Send a description of your needs to:

Roundhouse Manufacturing Co.Inc
Box 1431 White River Junction VT 05001 Phone: 802 295 6926

pricing so consumers ultimately have access to programming at the lowest possible rates.

5) **Copyright**. They are concerned about whether scrambling of signals serves the best interests of the program copyright owners. Will signal scrambling (and therefore payment for use of signals) encourage programmers to create more programming?
6) **Network service**. They are seeking to learn how many homes/people do not have access to ABC, CBS, NBC (and perhaps PBS) programming. The last such study was done by the Denver Research Institute in about 1973 and it showed 2.4M US homes were outside of terrestrial service reach for three or more TV signals (2.4M had no service or fewer than 3 channels of service). Specifically, the Commission now wants to know just what signals these rural homes can receive and how many are still missing at least the basic 3 (4) networks.
7) **Authority**. Does the FCC have the authority, under existing laws, to create and enforce a national 'scrambling standard', and, regulate program distribution and program changes.

This sounds like a considerable amount of data to be collected in a very short period of time. It also sounds like a project which should include armies of home dish owners who listen to and support **Keith Lamonica** and **Chuck Dawson**. Clearly, it would not hurt here to build a record of data and comments at the Commission which turns into a huge mountain of material and becomes impossible to ignore or escape. I hope that both Lamonica and Dawson have jumped on this and are actively encouraging their listeners to flood the FCC with reams of personal statements. In particular, while many professionals could file intelligent comments concerning questions 3, 5 and 7 (above), questions 1, 2, 4, and 6 demand TVRO user inputs. Question six (here), relating to network services, should attract no fewer than 100,000 pieces of mail to the FCC from people who own dishes and who are ready, willing and able to tell the FCC in their own words that 'No indeed, we do not receive regular (terrestrial) service from all 3 (4) networks!'

Such an outpouring of letters will not make a scientific study which the FCC can recite back to Congress, but a roomful of mail numbering in the tens of thousands would drive home the point that CBS and others are full of excrement when they claim they reach all but 400,000 US homes.

We also need to dispose of this harebrained scheme to allow the networks another 25 years to build 'translators' to serve these unserved homes. Remember we have had 1 to 10 watt TV translators for more than a quarter century now, and we still have some very large number of homes with no 3-network-service. **CBS would like to stonewall this issue**, and get out of having to provide service. Their affiliates, supposedly studying how they might do this if **forced** to do so, would also like to get out of doing it. But this will not deter the networks and their affiliates from sitting in Congressional hearings and lying through their teeth that 'translators will solve it all'.

One way to derail this hogwash is to have tens of

TI PROBLEMS?

ASP, INC. INTRODUCES AN INNOVATIVE NEW PRODUCT TO HELP SOLVE YOUR TI PROBLEMS. IT'S CALLED THE TELEPHONE!

HERE IS WHAT WE HAVE TO OFFER:

- Technicians with years of experience in T.I.
- Free brochures on proper interference filtering.
- Recommendations on proper diagnosis, TVRO equipment, site survey techniques, and much more.
- A book on how to solve your most difficult installation headache for only $9.95
- The best engineered I.F. filter devices at very reasonable prices.
- The most effective approach to eliminating lost sales due to terrestrial interference.

tel • e • phone, tel' e • fōn'', *n.* An apparatus for the transmission of sound. The best known instrument for combating Terrestrial Interference.

1-800-TI-CURES

TOLL FREE TECHNICAL ASSISTANCE

In the past two years, thousands of satellite dealers have taken advantage of ASP, Inc.'s free help with their terrestrial interference problems. In the process, we have accumulated a tremendous amount of data on what works and what doesn't. In many cases, changing an antenna or installing a filter is all that is needed. Instead of getting the run around or wasting time trying ineffective solutions, get the most effective techniques available by calling us toll free.

Why Attempt A Terrestrial Interference Installation Alone When ASP, INC. Is As Close As Your Telephone? Call Today....

1-800-TI-CURES

ASP, Inc.
3341 Holwyn Drive
Lexington, Kentucky 40503

thousands of people who live in the mountainous west and who have service from one or more translators write the FCC letters telling the Commission why translators are a bad deal. They will need no help from me; anyone who has been forced to watch terrestrial TV through translators has their own list of horror stories to tell. **Here is where I see Dawson and Lamonica performing a useful service**; they should work their listeners up into a frenzy so **the FCC is flooded with letters** detailing why translators are not the answer.

The FCC is conducting this inquiry only because they have been forced into a corner by vocal members of Congress (ie. Gore, Tauzin, others) demanding that the Commission 'show more responsiveness to the needs of rural Americans'. Congressman Wirth had made a formal request for such a study; Senator Bumpers and Senator Ford in their pending bill S-2666 would actually require the FCC, by law, to take on such a study.

The Commission has an arm-length relationship with Congress. Each year, the FCC must have its budgetary requests approved by Congress. Having several key members of Congress 'mad' at them is a good way to have their budget approval process dismembered. They know that. At the same time, this has been an era of 'marketplace solutions'; many of the FCC rules have been dismantled since Reagan took office under the master plan that Government intervention in private lives and business should be cut back. So the present FCC, appointed or reappointed by Reagan, is naturally responsive to that master plan. Asking the FCC to write new rules, establishing a new 'department' and hire new people to administer new rules is counter to the current regulatory philosophy. Indeed, the Reagan NTIA, the official voice of Reagan policy in matters relating to communications, is on record as believing "We should wait until at least mid-1987 to see if the present problems sort themselves out".

Chuck Hewitt is quoted as observing "The fact that they are moving is enlightening, but a decision needs to be made in weeks, not months." The FCC, after announcing the inquiry held a press conference where they carefully pointed out "This is not regulatory intrusion; this is merely a study to see IF there is a problem."

What we have to do is to build a 'record' here which **forces the FCC** to come to the inescapable conclusion that 'YES, there IS a problem'. There will be the opportunity to write and file our own comments (CSD will provide instructions as soon as they are known). More important than what we file as dealers and distributors is what we somehow do to bring our customers, the TVRO consumers, into the inquiry. The FCC would like this to be an orderly, neat **little project** requiring a couple of clerks to collect stacks of paper and tabulating those stacks of paper. **Our task is to turn it into a mountain of paper** which by its sheer weight requires special attention at the FCC. To do this effectively, we need to obtain and publish the home addresses and telephone numbers for every key person at the Commission. We need to inundate the Commission's formal offices with stacks of letters and press clippings and we need to load down their inward bound telephone circuits with mad, irate, consumers who 'demand action'.

Lamonica and Dawson and others on the air have special talents in this area. Let's all see that they get to work making things happen.

TV FOR PROFIT

Money From Advertising or Renting De-Scramblers

Rebroadcast Satellite Programs or Video Tape

TELEVISION TRANSMITTERS TO COMPLETE SYSTEMS

BROWNING LABS, INC.
8151 N.W. 74th Avenue, Miami, FL 33166
Tel: (305) 885-3356

10.525 GHz Microwave System

The Westplex portable microwave system is a budget priced FM link operating at 10.525 GHz. The system is capable of transmitting NTSC color video, plus an audio channel and an optional duplex phase or dataline. 40 miles are realistic using an optional 2 ft. dish at each unit. Other options include a remote RF head, AC/DC operation, 35 mw or 50 mw output.

The Westplex system is ideal where a cablelink is impractical, such as across roadways, waterways and where trenching or cable lines are not feasible.

ADVANTAGES:

FM superhetrodyne design
Sectional design for easy service
Full color NTSC compatible
Extremely simple to operate
Duplex phone, data, or control line
Low cost and extremely versatile
Full metering
Systems from $2500.

WEST, INC.
1741 Cedardale Rd.
Mt. Vernon, WA 98247

(206) 428-2810

BORESIGHT IS SELDOM BORING!

EACH Thursday night at 9 PM eastern on Spacenet, transponder 17 the home TVRO industry 'sounds off'. The video-journalist crew at **Boresight News** brings you the latest news and happenings in the TVRO industry in a fast-paced, provocative, usually informative and often entertaining format.

BORESIGHT brings you live coverage from industry trade shows, detailed reports on new equipment, legislation, and the ever changing status of scrambling. Boresight is good investigative television journalism by people who are a part of the daily world of TVRO. Join us each Thursday and become a part of the Boresight viewing audience, now numbering tens of thousands each week!

BORESIGHT'S fast paced 60 minute format features a weekly news report, two or more 'television magazine features', and often strong and usually controversial editorial comments from Boresight founder Shaun Kenny.

BORESIGHT NEWS:
Thursdays, Spacenet I
Transponder 17
9 PM Eastern
(201/562-0087)

IS DES Dead?

Here is a report that may leave you (and some people at M/A-Com) scratching your head. The National Security Agency, NSA, believes the DES encryption system is a dead duck.

DES or the Digital Encryption Standard/Data Encryption System, has been the cornerstone of high security encryption. We are most familiar with the DES 'standard' because of its adopted use by M/A-Com in the Videocipher system. What you may not realize is that DES is sort of an (American) 'national encryption' system created by studies paid for by our US government funds. A very large amount of the military and foreign services message traffic now routinely sent worldwide is DES 'encrypted'. Now NSA reports that they believe DES is 'vulnerable'; in fact, they are refusing to endorse its use beyond the year 1988.

That means that those commercial systems built around the DES technique are in considerable jeopardy. M/A-Com refuses to allow the export of their Videocipher units, for example, because of a National Security Agency 'rule' that forbids the export of anything using the DES algorithm. Remember all of that fuss created when M/A-Com refused to allow offshore manufacturers of TVRO receivers to build descrambler units offshore, or to take the IRD bricks offshore for the purpose of building them into receivers? That all linked to the NSA 'rule'.

NSA and other government folks are now telling operators of satellite systems (such as GTE or RCA) that 'DES is no longer secure enough for the transmission of government traffic'. In fact **Harold Daniels**, NSA's deputy director of information security is on record stating **"We will continue to endorse DES products until January 1, 1988 but we do** not intend **to certify the DES algorithm when it is reviewed in 1988".** In simple terms, after 1988 DES is a dead duck in the security waters.

Videocipher uses DES. So do many other products and security systems. But no security system uses as much DES in so many pieces as Videocipher. Much of the attraction of Videocipher has been its support by NSA, and the implied support that any user of DES receives from the government. If somebody set out to break Videocipher, they were also setting out to bust DES. With all of that high security message traffic going worldwide in the DES format, that immediately put a Videocipher breaker at odds with the US Federal government. If you could bust Videocipher, you could **also bust** American diplomatic and military traffic.

One must suppose that foreign adversaries to the US have very far reaching programs underway to bust the DES system. Given enough time, and enough computer power, they (like groups such as Desug) will bust DES. And that is why NSA is now recommending that DES being given the boot as soon as 1988.

What that does to the Videocipher system and products is undetermined. It appears that while Videocipher can continue on, without NSA sanction, it will have to 'fend for itself' in a sea filled with increasing numbers of code-busting-sharks. One hopes that GI, when they bought Videocipher, knew this was coming and appropriately 'discounted' the bucks they were paying for Videocipher. Yesterday's technology always sells for less than the current state-of-the-art stuff.

UNITED SATELLITE SYSTEMS

"The Satellite Communication Company"

THE SR-3A IS HERE

Widely recognized for the industry's best video and audio quality

USS, with it's unique blend of products and services has been a leader since the dawn of the TVRO industry. We were here in the beginning and will be here for the future by offering excellent products and services.

USS has been recognized for our superb antennas which are built to commercial standards. The electronics we manufacture have been reviewed by many magazines and reported to have the best video quality available.

We all face a great challenge in our industry. It is an evolutionary period which will require a new apporoach. USS is ready to meet the challenge with products for the home and commercial markets.

Contact USS for information on home satellite equipment and commercial satellite equipment from Video SCPC to LAN Data Systems.

"Ready to meet the challenge of the future"

UNITED SATELLITE SYSTEMS™

St. Hilaire, MN 56754 Better By Design
Phone 218-681-5616 800/328-7733

We still believe promises are golden.

NSC

NATIONAL SATELLITE COMMUNICATIONS

While many reflect their good intentions, strong principles create our image.

Distributor of Goldstar TV's, Monitors, VCR's, and VHS Format Tapes.

Basic truths form the foundation of our Nationwide Service Committment. Time and effort have made NSC a national distributor for all major brands of satellite receiving equipment. Quality support to our vast network while keeping the best interests of the consumer at heart, have meant something. Years of uncompromising professionalism helped shape our mutual goals. We constantly strive to be the best and encourage and train our dealer network to do the same.

Call (Toll Free) today for the location of the nearest "Authorized NSC Dealer". Through NSC, his promises to you are golden.

For More Information:

In New York: 1-518-383-2211

In Florida: 1-305-851-4738

To Place Orders Call:
New York Office:
1-800-833-4485 (National)
1-800-522-3538 (In State)
Florida Office:
1-800-832-8659 (In State)
TELEX: 324701 SATELLITE
FAX: 518 383 2234

NSC™

NATIONAL SATELLITE COMMUNICATIONS™

CORPORATE OFFICE:
21st Century Park
Clifton Park, NY 12065

FLORIDA OFFICE:
10779 Satellite Blvd.
Orlando. FL 32821

EUROPEAN OFFICE: BARROW-IN-FURNESS, ENGLAND.

© National Satellite Communications 1984