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Bob Cooper's

JANUARY 15 1999

SatFACTS

MONTHLY

Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

WORLDBOX coming to your neighbourhood

PREVENTING premature dish failure

Optus Vision says 'no' to satellite- but Piracy Cards already exist

✓ Latest Programmer News
✓ Latest Hardware News
✓ Latest SPACE Pacific Reports
✓ Cable TV Connection

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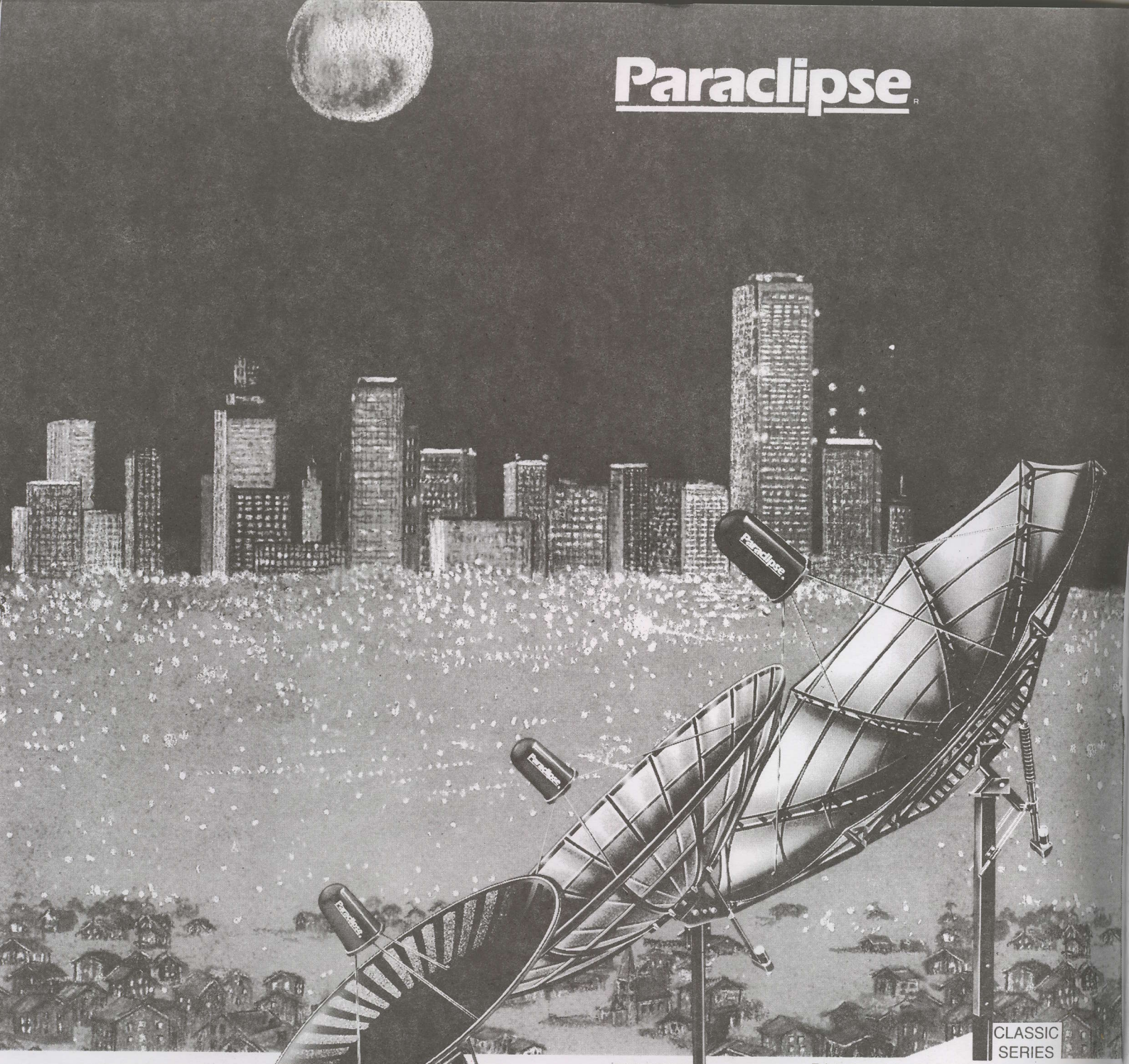

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SatFACTS
MONTHLY

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is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd. This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no long define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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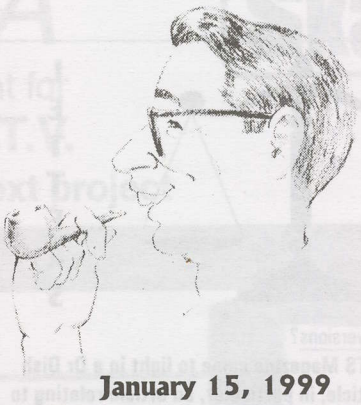
COOP'S COMMENT



January 15, 1999

Some random opinions to launch the start of the last year in this century, millennium, and decade.

Rationalisation in Australia. Why would Foxtel finally elect to stay on Optus B3? Two sound reasons - it was ultimately cheaper than PAS-8 and most important of all - *Austar is still there*. Why should that matter? Foxtel firmly believes it will end up being the *only* pay-TV company in Australia. Maybe not this year, perhaps not 2000 - but soon. So if you conspire to swallow up Austar as you have out manoeuvred a crippled Optus Vision DTH plan, it does not make sense to have your "next prey" on a satellite different than your own. It is much easier to gobble up a neighbour when he lives next door to you and shares some of the same infrastructure. PanAmSat played into Foxtel hands making available PAS-2 Ku and then PAS-8 Ku for testing and this greatly assisted Foxtel in convincing Optus the plan to move away from an Optus satellite was serious. In the end, the cunning "fox" outwitted the lumbering, badly managed cripple Optus Vision (see p. 30).

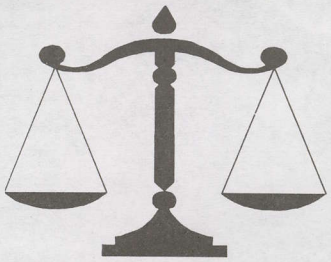
Stopping piracy. Now comes word that the BSkyB version of the Worldbox must have a smart card that "matches" the IRD or neither will function. It seems the smart card, when initially activated by the installer, does a "data swap" and the card's SSN (secret serial number) becomes imbedded into the IRD's memory banks. If a new card is inserted with a new (different) SSN, the IRD simply refuses to play. What this means is that piracy cards - when and if available for BSkyB - must somehow convince the IRD they go into that they have the correct SSN. Pirates in Europe are working out how to "fool" the IRD into thinking the card is the original issued card. *Bottom line*? You cannot bring an IRD from Europe to New Zealand and insert a SKY NZ card.

Chinese services. C Net Taiwan, running FTA on ApStar 2R and Palapa C2 in parallel, scheduled to go CA and accept subscribers around February 1 (see p. 31). That Asia and the Pacific badly need a wide area coverage balanced subscription package for sale to Chinese living throughout the region is not in question. That this particular group, essentially the same people who messed up on Intelsat 702 with their combination American "porn" and Taiwan family television (then trading as Space TV Systems), is in question. We made the "mistake" of making a "big deal" of Space TV Systems when they first appeared, we won't make the same mistake with C Net Taiwan. It is there, we hope it stays, and we wish it good numbers.

Pissing people off. We do it each month, and usually know it before the ink is dry. There are two ways to put together a publication like this - treat everything as if it were sugar coated, say nothing bad, rude or inflammatory about anybody or anything - *or* - tell the truth as best we know it. Anyone who has read SF for more than 2 issues knows which choice we make. NHK - can these guys be serious? Moving to PAS-8 (p. 29) after thousands of people in the Pacific have invested in 2.4m PAS-2 dish systems to receive their service? Does NHK have a kamikaze wish? RTIF - we planned a serious review of the "mistakes" that have been made with the Australian RTIF project in this issue - pushed aside by the Worldbox. Next month, we will definitely "piss off" some Australians. VG 666 - A mid-December civil suit filed at the Federal Court of Australia, Melbourne seeks to sort out who "owns" the rights to the trade name "UEC" in Australia (p. 4, December). There were some verrry interesting affidavits filed with the suit - and *everyone* involved got *really* pissed off because *we* discovered the contents. Amusing.

-ON THE COVER-

Shipped in master cartons of 5 units, Pace DSR600 series IRDs are flying into New Zealand in quantity. A report on the "Worldbox" ploy on p. 6.



LETTERS

SA IRD Conversions?

"SatFACTS Magazine came to light in a Dr Dish Internet article, in particular, an article relating to modification or conversion of a Scientific Atlanta PowerVu decoder by a New Zealand business. Further, please forward subscription information for SatFACTS."

S.J. Diarmid, Manager, Steering System Specialists, Bulawayo, Zimbabwe

The only SA "mods" we are aware of relate to minor software adaptations created by Robin Colquhoun (Auckland). We are not aware of any successful attempts to pirate PowerVu reception - which we suspect is the real theme of your request!

Thaicom Reception?

"Is it possible for me to access any of the services from Thaicom 2 or 3 from my location? I have a 2.4m motorised reflector, Universal 0.6 dB LNB and Drake ESR 800XT receiver."

Dakahlia, Egypt

On C-band, Thaicom 2's quasi-global beam (from 78.5E) is 36 dBw plus into Egypt; the "zone" beam intended for SE Asia around 30 dBw (marginal for a 2.4m dish). Ku band coverage does not include Egypt - your (quoted) "0.6 dB Universal LNB" strongly suggests you are Ku and not C-band equipped.

Viagra Channel?

"I would like to thank you for the interesting information in SatFACTS. We have a Paraclipse solid dish and seem to be able to get everything we should except the Fashion Channel. Perhaps we should suggest Viagra to 'get it up' on the screen!"

Alex Short, Kingaroy, Qld,

Viagra is the 1998 medical sensation because it claims the ability to increase male potency. Readers will note we kindly passed over an opportunity to place Mr. Short's name in the same sentence as the drug name.

Horizon to Horizon

"I am trying to locate 3 horizon to horizon mounts such as that described and displayed on pg. 6-12 in August SatFACTS. I purchased one from Av-Comm 2 years ago and they advise the original manufacturer is now out of business. Does anyone know of a source?"

Charles Wolnizer, Sandy Bay, Tasmania (fax) + +61-3-6225-4900, E-mail wolnizer@netspace.net.au

We have come up blank on this one - a reader in Solomon Islands is also looking for H to H mounts so if you have one or more stuck in a shed someplace, let us know!

Greek Encryption?

"Does anyone 'really' know when and if the Greek channel on PAS-2 (3778 Vt) will encrypt?"

Gary Salisbury, Kan Sat, Queensland

No, nobody knows, least of all Antenne TV.

PROGRAMMER PROGRAMMING PROMOTION

UPDATE

JANUARY 15, 1999

Battle between Star TV Asia and Indovision erupted into open warfare December 13. Star TV management personnel, responsible for Indovision, turned off authorisation stream for C2 Indovision feeds (although transponders remained 'on'). Indovision responded by advising dealers to begin installing S-band Cakrawarta LNBFs and repointing C-band dishes for 107.1E in attempt to restore service to their subscribers. S-band LNBF packages reportedly are of Taiwan manufacture, pricing for new install is A$1600+ for Thomson/RCA IRD, LNBF and smart card while monthly service levels (3 to select from) range upwards from US$14. Of interest - Star TV is issuing its own smart cards for the C2 service according to Hong Kong source while biding time until launch of AsiaSat (2 or 3S) revitalised Star Digital platform (C2 feeds will be shut down as soon as the alternate service is available). Insiders are forecasting the S-band service will not last long, citing contractual problems with programme suppliers (who are caught along with Indovision subscribers 'in the middle' of this mess). Adding to Indovision problems: Cakrawarta 1 satellite has significant "battery charging anomaly" which affects operation during twice-annual solar eclipse periods (they have filed a US$40 million insurance claim on this). And - shortage of S-band hardware. The queue favours subscribers who paid Indovision money to upgrade the original Pace IRDs with Thomson/RCA units; next will be those who bought new RCA units and finally those who kept their original Pace units (and it will be at least April for this group!).

Beating the system. An Asian reader who tried to bootleg a functioning Indovision card into an appropriate Pace model IRD located outside of Indonesia found out the card will work - briefly - and then quits. "*They zapped me because the card number did not register with the IRD serial number*" - the IRD still being located there. Perhaps, but shipping cards around without the companion IRD is obviously a new challenge.

Foxtel announcement (December 24) they will relaunch Foxsat service to new subscribers in Victoria and other markets around 1 February closes door on PAS-8 for Foxsat scenario. Foxtel plans purchase of up to 55,000 IRDs before March 31, up to 50,000 in second 3 months, staying on Optus B3 and with Irdeto; for now. UEC seems to have inside track at under US$260 with unusual "sweetner." Foxsat also taking over NSW "East Coast TV," replacing existing MDS customer equipment with new satellite systems (at no cost to EC subscribers) and closing ECTV offices.

Papua New Guinea programme distributor Hitron Pty Limited lost court case at National Court of Justice when Judge Sevua ruled "common law copyright" is not a license that allows Hitron to withhold programming from sub-licensees and viewers. Hitron argued its "contract" with CNNI and others should prevent anyone other than itself from installing and authenticating reception for PNG viewers. Judge decided, *"it would be most unfair and unreasonable if the public were to be denied access to these programmes*." Hitron claimed "exclusive" rights to a wide range of programming services, was PNG representative for Indovision before that service stopped Palapa C2 distribution.

Taiwan C Net that has been running FTA including Sun Movies (Palapa C2, parallel feed on ApStar 2R) plans to use only one of these birds, will encrypt using Nagravision (smart card) but distribute Digicipher (GI) IRDs to clients through "sole authorised distributors" in each country. Encryption and turnoff of either C2 or Ap2R likely on or by February 1. Possible Australian distributor - Ming Leu at NetSat (tel + +61-2-9687-9903, fax + +61-2- 9687-9906, Email mleu@rivernet.com.au).

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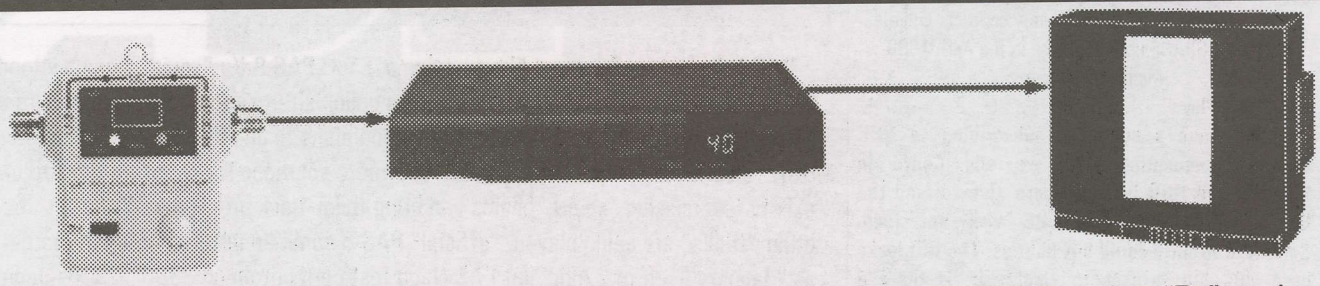
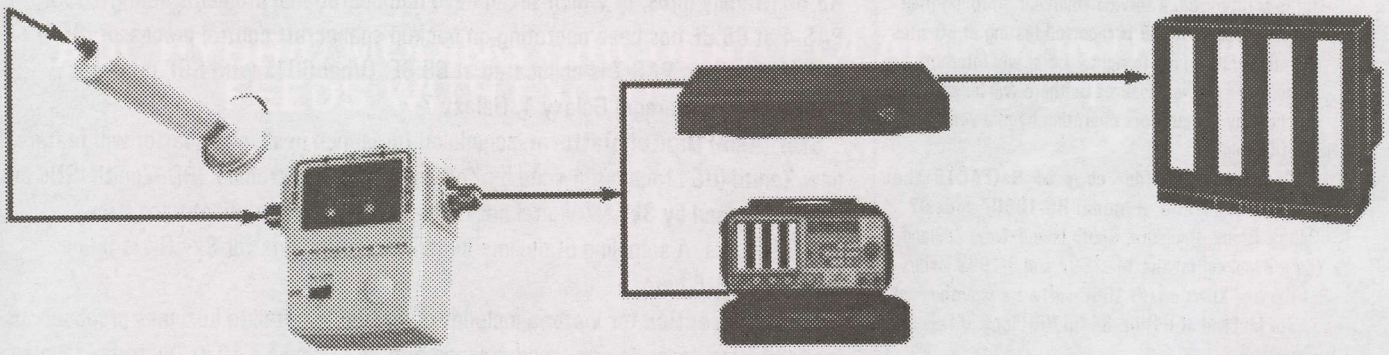


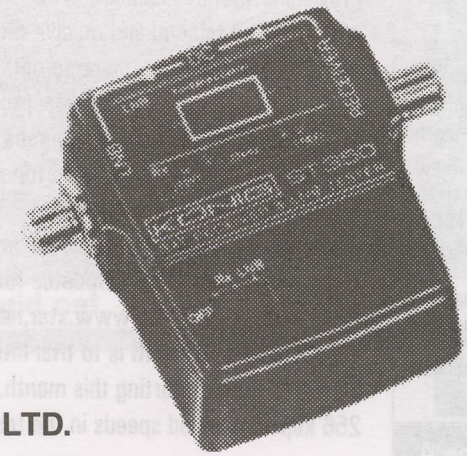
To test the operation of a satellite TV receiver, you only have to connect it to the **ST-350**, to select "Rx" mode and tune to 1385 MHz. By using a standard TV set you can verify that the test signal, consisting of two black bars and white bar in the centre, appears on the screen. Simultaneously, the **ST-350** generates a sound carrier at 7.02MHz that enables to check the audio function.It is usual that receivers are provided with switching signals for the LNB. Two LEDs on the **ST-350** indicate whether the supply voltage is 18 V or 13 V. The presence of a 22 kHz switching signal makes the LEDs to blink.

LNB VERIFICATION

One of the outstanding features of the **ST-350** is that it can evaluate most LNB circuits within a LNB. Through a plastic protector located on the front of the instrument, the **ST-350** radiates signals in the satellite downlink microwave frequency. By positioning the LNB in the radiating zone, three black bars and four white bars will appear on the TV screen. With this aim, the receiver has to be tuned at the frequency showed in the rear of the **ST-350**, which depends on the LNB being used.

It is usual to find LNBs in which one polarization fails.
With the **ST-350** both polarizations can be checked immediately.





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Not Just for New Zealand

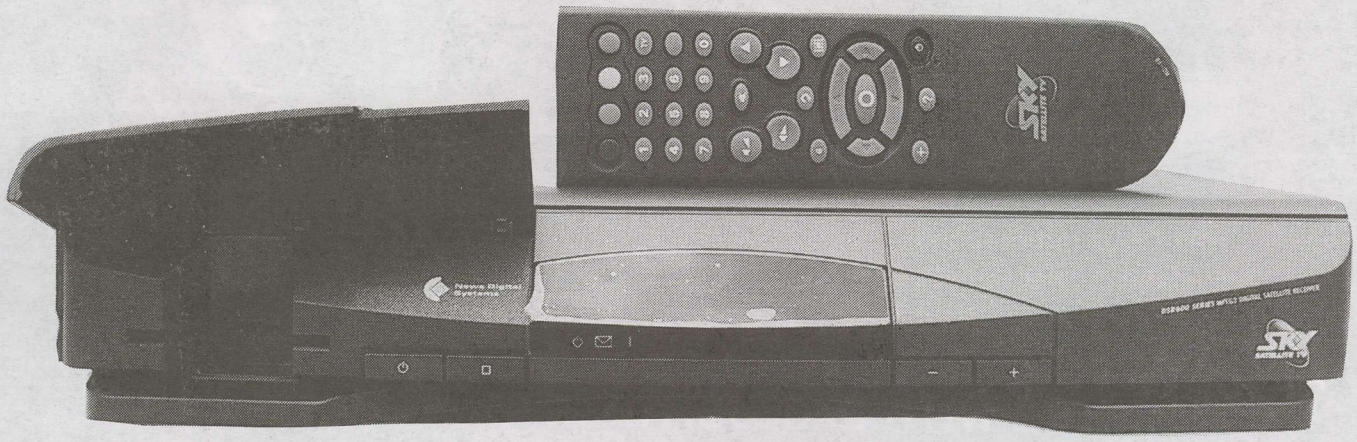
NDS's "WORLDBOX" IS IRD OF THE FUTURE

No matter where on earth you reside, this report on the latest NDS designed "Worldbox" digital IRD will be an "early warning" of what you have coming to your own neighbourhood - *soon*.

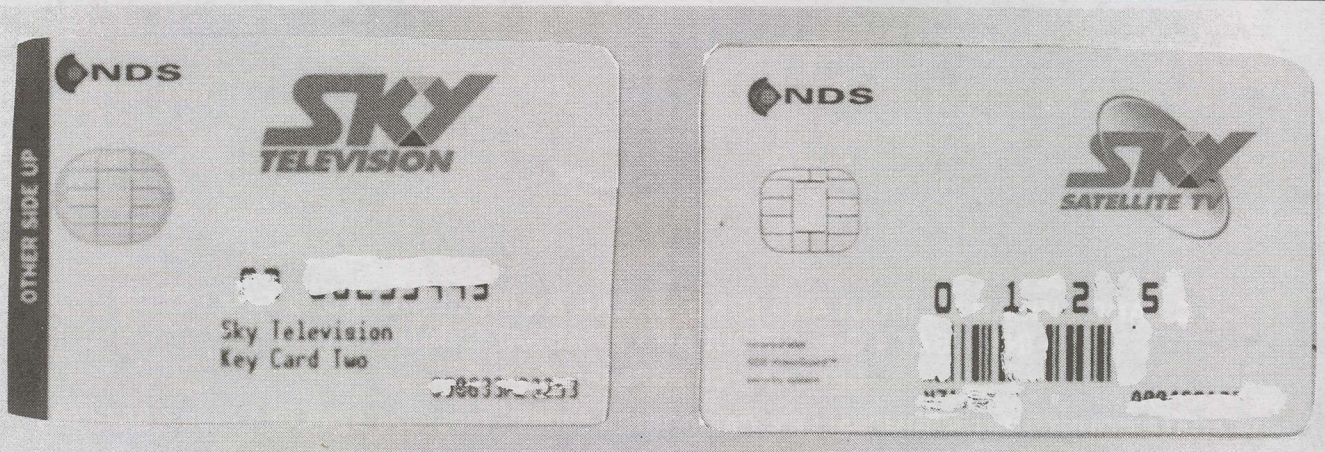
"Worldbox" (also known in the trade as "Digibox") is the first phase of an attempt to force-feed NDS conditional access encryption technology to the entire digital world. Today, it is employed by BSkyB in the UK, Sky TV in New Zealand, and Sky Latin America. Sometime after April 1st, it will begin service for Star Digital Asia.

The plans for Worldbox were drawn years ago based upon a business plan hatched at News Corp in the UK; one "basic" IRD box with add-on modifications that might be required in some markets but not others. All Worldbox versions would share a common design and physical layout. Some versions would include internal modems allowing consumers to "order" from on screen menus additional programming, products, or (perhaps - one day) even "on-line banking." Worldbox was to be the ultimate "couch potato" utensil, but it had to be flexible in design and part layout so that new component parts could "plug in" or be easily substituted for existing component parts without major circuit board redesign.

Until Worldbox, IRD *design* has always been done by receiver manufacturers. Not this time. With the buying power attached to multiple News Corp controlled digital service launches throughout Europe, Asia, South America and the Pacific, News Corp could afford to design their own IRD. This changes all of the rules - previously programmers such as Austar have been forced to accept existing IRD designs perhaps slightly modified in software content by an obliging manufacturer. With News Corp's multiple service launches, they could afford to demand a box designed by their own staff to their specific technical requirements. Pace, once the only supplier to News Corp, is now one of many. A recent entry, Zenith, was



Videocrypt analogue card (left) and new NDS digital CA card (right) are nearly identical in appearance



Rear deck of 600 series Worldbox includes pair of SCART outputs as well as RCA family output jacks for video and audio (2). Zenith operating manual includes detailed connection options diagrams and instructions - Pace does not (see text).

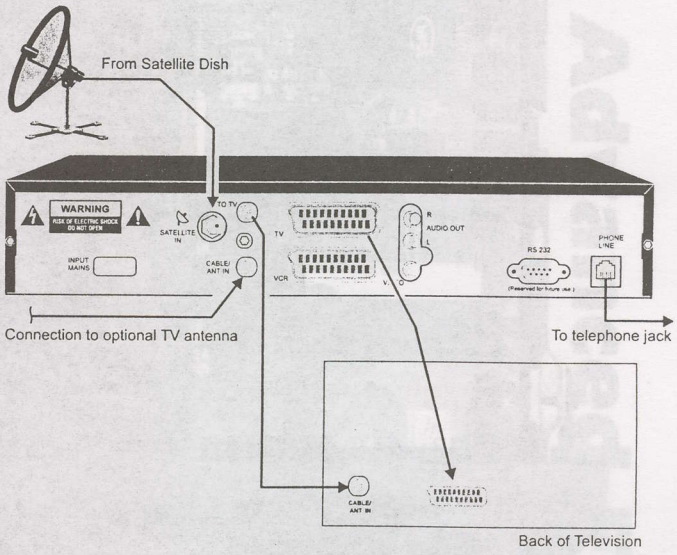
chosen by News Corp to be the "second supplier" to Sky NZ and is currently tagged as the "first supplier" for the rollout of Star Asia Digital when it begins service in the second quarter of the year.

The first introduction of Worldbox was during October in the UK. Using the same NDS created specifications, four suppliers have been "approved" for the BSkyB aspect of the world project. Amstrad, Grundig, Pace and Panasonic (Matsushita UK - the same people supplying the TU-DS10 to Australia) are all "licensed" to supply BSkyB IRDs; to date, Pace has been the volume producer and Grundig a second source. Several manufacturers including LG Electronics are "licensed" to build television receivers with the special "Worldbox" IRD guts included for sale as all-in-one digital TV sets. LG is the corporate parent of Zenith.

Most of the initial public reaction to the introduction of BSkyB digital services and the rollout of the first generation Worldbox IRDs was very positive. BSkyB claimed back orders for the service approaching 100,000 within weeks of introduction and released figures showing that in the first 100,000 digital subscribers, 30,000 were new-to-satellite viewing homes. BSkyB priced the analogue to digital conversion (for existing analogue subscribers) at UK159.99 and for new subscribers UK199.99. They explained these were "subsidised" prices which only applied if the subscriber agreed to several conditions, including having the IRD's in-built modem fully connected (see p. 10 here). Those not so agreeing are paying UK370.

The cost of digital TV includes (where applicable) a 45cm dish, LNBF, cabling and installation. The "real" cost of the equipment plus installation would be close to the UK370 non-subsidised price. There is evidence that modem-to-telephone line connected homes at the subsidised price earn some level of EC (European Community) rebate - a fee paid back to News Corp. If this is accurate, the assumption must be that News Corp "gets back" from the EC bureaucracy a substantial portion of the difference between a subsidised installation (160-200) and the non-subsidised price (370).

Sky New Zealand offered a similar in concept "discount" to existing (terrestrial served) analogue

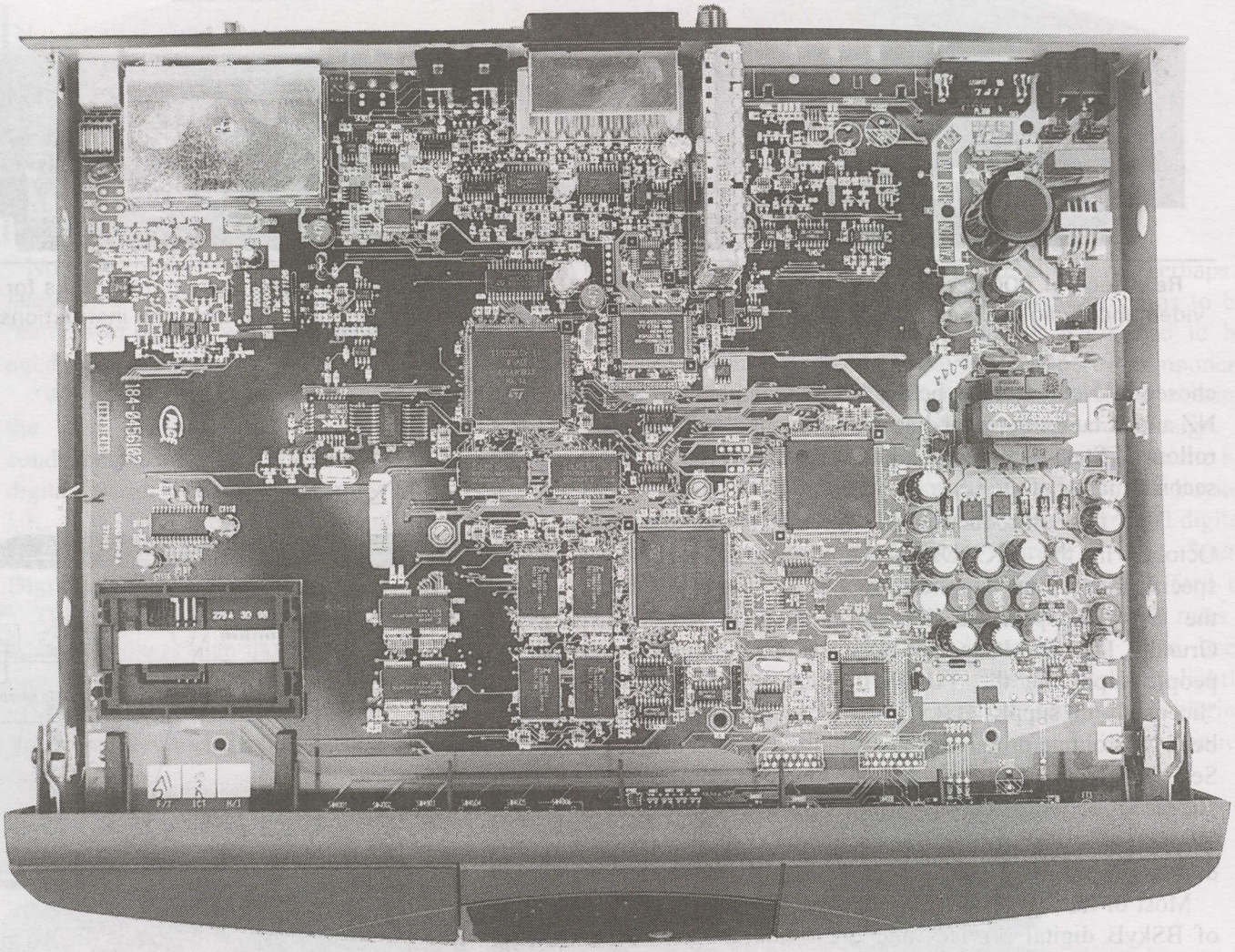


subscribers; NZ$495 for a conversion to (satellite) digital. New to Sky subscribers are paying NZ$650 for the same service. Unlike the BSkyB package pricing, New Zealand customers of Sky are not "purchasing" anything. The $495/$650 charge is a "joining fee" and if Sky satellite service is discontinued for any reason, the equipment goes back to Sky NZ and the customer receives no rebate or refund. Just as a comparison, Australian Austar currently advertises a "joining fee" of A$199.95 but usually comes down to A$49.95 (title to the equipment remains with Austar).

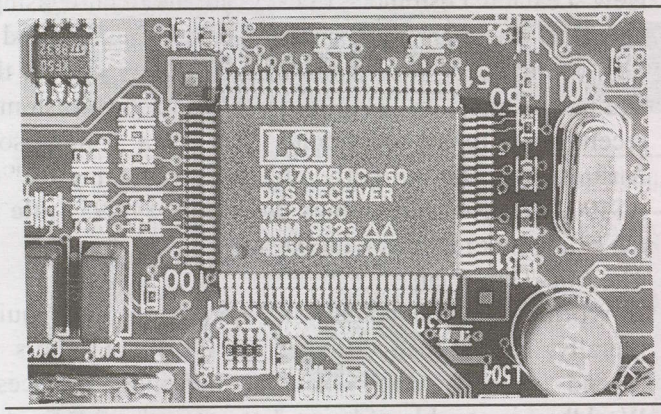
The Mid-Term Plan

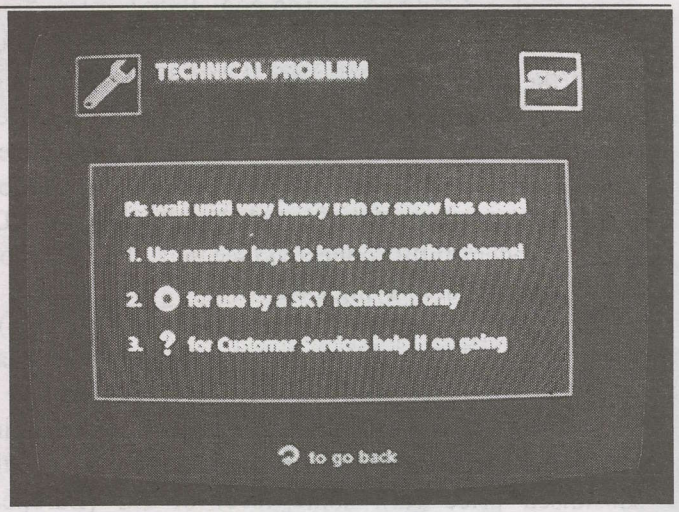
Worldbox is conceptually a "money machine," quite literally. It has been designed to allow consumers to "spend money" and "handle personal finances." Worldbox is capable of being "interactive" - that is, it is a machine that "communicates" with a service provider. It is capable of processing digital data streams sent to home size dishes from a satellite and giving a "response" to the service provider (or others) through a low speed telephone modem (link) built into the IRD.

The modem is standard only in regions of the world where the terrestrial telephone service will support the "return link" (Sky South America, for example, has not begun as an "interactive" service). The modem decision



Power supply occupies right hand 20% of full board (front to back) and has component count 45% greater than UEC 642; it is on single "mother board" of the full IRD, not separate. "DBS receiver" chip (centre and below) is state-of-the-art demux processing device by LSI (part # LSI L6470480C-60).





concerning the second-quarter 1999 launch of Star TV Asia digital service is not public at this time.

Essential to the News Corp plan is the EPG or Electronic Programme Guide. The consumer sees the EPG as a convenient tool for selecting programming choices. News Corp sees EPG as a *sales tool* to encourage viewers to "trade up" to pay per view offerings. Subscription (pay TV) is considered an "entry level" service by News Corp - one that gets the subscriber hooked up and keeps them interested enough to offset the monthly subscription fee. The economics of supplying equipment and an installation that costs the service provider more than A/NZ $1,000 for a fraction of that cost only work if the equipment generates revenue on a monthly, annual or pay per view basis that earns the service provider a profit. News Corp believes pay-per view (or event) programming will do this and most financial analysts do not believe such a venture can be profitable without pay per view revenues. And thus

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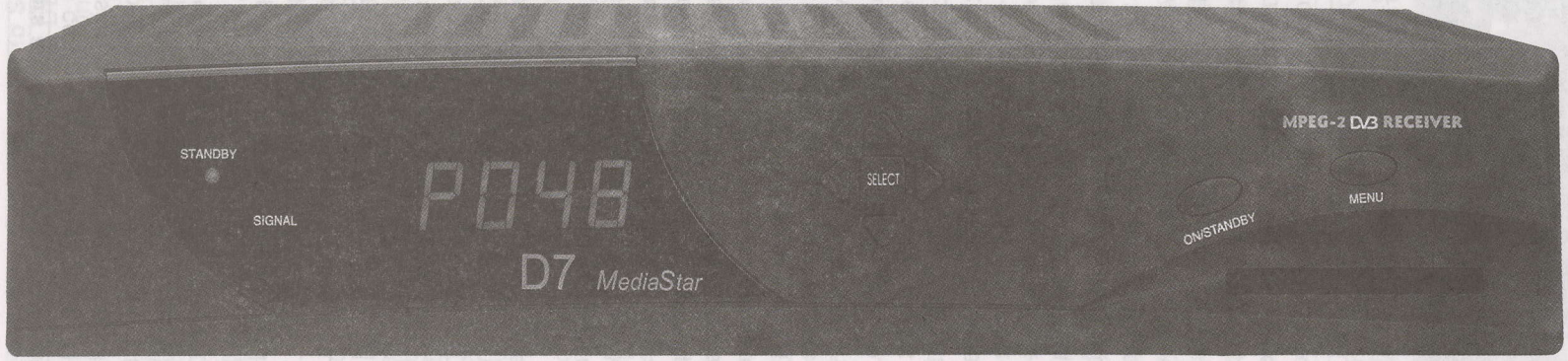

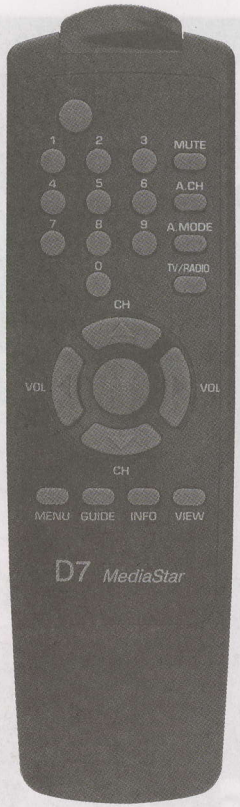

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What testers are saying about BSkyB version of Worldbox in UK

The primary early complaints centred around the things "Digibox" did not do - although were one day scheduled to do. The transmission data streams apparently have not been fully implemented and various features of the Digibox simply do not function. Amongst those: DiSEqC LNBF switching, seven-day (advance) TV listings, "enhanced" teletext (as in any teletext), multi-language sound tracks, the so-labelled "personal TV planner" (a system to allow locating programming of a specific interest days in advance). Additionally, never intended to function initially, the promised E-mail and on-line banking functions.

The Digibox claims to be "compatible" with non-BSkyB conditional access systems, utilising a CAM to be provided in the future (a slot appears for it on the rear deck - UK model only). There is a belief, perhaps not accurate, that this plug-in "extra CAM" capability was included to satisfy technical rules within the EC (European Community) and *cynics* do not expect it to function properly, if at all, when it is actually available.

Technical problems? Access to the TV Guide is said to be "very slow" and there are many negatives about the on-screen guide. BSkyB says these are "early days" and they expect much better EPG functions "in the future." Videotaping is another problem. The current Digibox has no switch-channel timer in it so when used with a VCR for home recording the user can only record one channel (or programme) - the tuner in the Digibox cannot be told to go to a new channel at a preset time for recording. Then there is the S-VHS output snafu. Pace, NDS, BSkyB and virtually every other participant had promised there would be an S-VHS output socket so those with similarly equipped TVs could enjoy higher video quality reproduction. There is no S-VHS output socket, nor is S-VHS available through the SCART sockets on the IRD (SCART provides PAL and RGB only). BSkyB uses Macrovision encoding to discourage viewers from taping pay-per-view movies. BSkyB has pledged not to employ Macrovision techniques for subscription programming services. The Digibox is equipped to enhance Macrovision if present.

The biggest complaint is the way the Digibox is being marketed. Users must agree to have a permanent telephone line connection to the IRD modem if they wish to qualify for the "subsidised" price of around 150 pounds. The modem is ostensibly included to (1) satisfy some obscure, not well explained, EC "rule" and (2) allow BSkyB to receive pay per view orders through on screen prompts chosen by the viewer. There is more - the modem connection also allows BSkyB to "poll" (call up uninvited) the IRD to check on what is being watched, has been watched recently, and - they say - check to ascertain the IRD is still at the authorised location (it is a breech of contract to move the IRD or smart card from the SUD [single unit dwelling] address specified in the contract). And this - if the user takes the smart card *out* of an IRD and attempts to use it in a *second* IRD, the card and IRD do not "match" and *there is no service*!

the importance of the IRD modem which facilitates quick, painless, ordering of pay-per-view events. In a non-modem pay per view world, the would be viewer calls a toll free number personally, stays on the line to pass along his identity, the name of the programme he or she wishes to "buy," and arranges credit information. With the modem, all of this information is transmitted from IRD to service provider automatically and if the IRD has to "wait in a queue" to deliver that information, the subscriber does not even know about the delay (perhaps the TV has been turned off and the room is empty while the transaction is completed).

This is a brave, new - and largely untested concept. Worldbox is cutting edge technology, designed to be modified and upgraded by new hardware parts and over the satellite link by new software downloads. It has not

Mosaic is clever "*What's on TV right now*" technique displaying service channels live at that point in time. Sky NZ launched with 6 programme services "in reserve" while waiting for transponder space to clear.

AND - what Sky installers in New Zealand report to SatFACTS

The SKY New Zealand version of the "Digibox" is sourced from Pace (the DSR620) and Zenith (an American firm now owned and controlled by Korea's LG Electronics). The Pace versions are manufactured by Dovatron de Mexico (of Mexico) and the IRDs (packed five to a master carton) are trucked to Los Angeles and flown by air to Auckland, typically in quantities of 1,000 or a multiple thereof.

SatFACTS surveyed installers responsible for a total of 425 IRDs during December; we believe this to represent 3.5% of the total change outs from analogue decoders to digital by Sky during this period. The 425 units were geographically spread from one end of New Zealand to the other and reflect no geographic "bunching."

(1) Highest percentage of "dead" units for an installer - 22%; (2) Average percentage of dead or quickly defective units - 2.1%; (3) Most common "dead unit" problem - Pace units, broken buttons on front panel (to initiate unit reset you must push 4 buttons simultaneously and if the buttons are broken, it is difficult to proceed to step two!); (4) Next most common problem - unit would not power up (power supply fault - about evenly split between Zenith and Pace).

We àsked installers to keep track of the BER (bit error rate) and the antenna size (60cm, 76cm) so we could develop a table of BER against dish size. The variables here are as follows: (1) Quality of the LNBF, (2) Pointing accuracy of the installed dish; (3) Care of making connectors and fitting cables; (4) Relative sensitivity of the IRDs; (4) Clear or cloudy skies. The tables below shows the tally from several hundred installs indicating the 'median' site will have a BER in the 2.5 - 4 region when using a 60cm dish plus LNBF as supplied by Sky NZ.

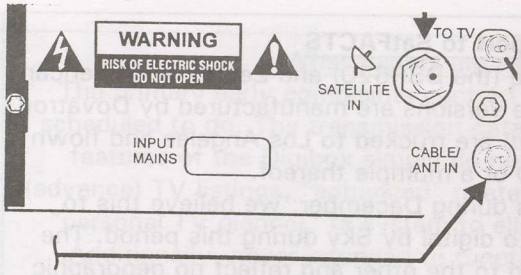
Table below shows IRD's relative quality reading (from installation menu) versus BER range (left hand column) as percentage of installs. Right hand table shows BER achieved versus dish size as percentage of total install sample survey group.

BER of	10-20	21-30	31-40	41-50	51-60	61-70	71+
-3	5.3%	2.9%					
-4		2.7%	18.4%	**34.5%**	15.8%		
-5					5.5%	13.2%	2.6%

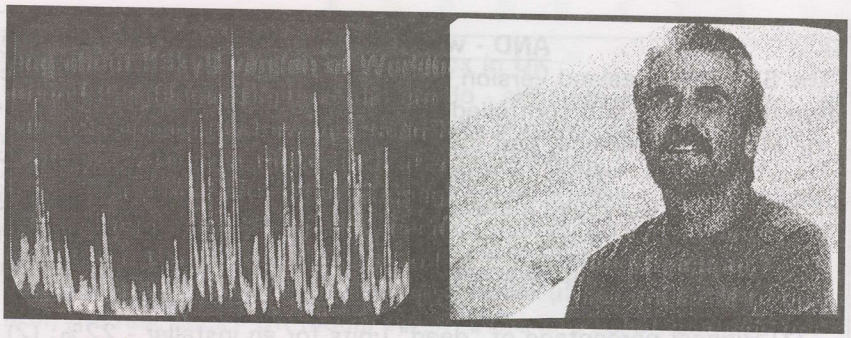
BER of...	60cm	76cm
-3	7.9%	0%
-4	63.2%	7.4%
-5	5.3%	16.2%

been designed to be "friendly" to any non-NDS format transmission service. The BSkyB Digibox promises to be capable of reception from non-BSkyB service packages (several hundred FTA services exist) but non-NDS-*encrypted* reception will require a plug-in common interface CAM which is not available initially. Of interest, the Sky NZ IRDs *can* be directed by the Installer Menu (entry of 0000) to operate on C-band. SatFACTS found it will load C-band services such as NBC Asia - but not display them. PowerVu services attempt to load but ultimately nothing really happens. However, with DVB Compliant packages such as the European Bouquet, we found the DSR620 produces normal digital reception. Not great, not very handy to use, but digital reception none the less.

Video quality is ... well - only marginally better than VHS tape running in standard play. Audio, however, can be near CD in reproduction quality. These are NOT improperly taken photos - that's the way it looks.



Connection to optional TV antenna



If you do this (connect terrestrial aerial to "optional TV antenna" input) and measure the IRD generated internal "trash" coming out of the "Cable/Ant In" spigot on a spectrum analyser, what you will see is centre above. That's primarily switch mode power supply "hash" and digital processor harmonic beats going "back" to the TV antenna. YES - they are strong enough to raise havoc with neighbour's off-air TV reception. Equally unfortunately, the modulated RF output that feeds to TV set (through "TO TV" connection) *also* leaks back out of the "optional TV antenna" input line as well. Photo on right shows how much signal we found on this input line from the UHF modulator that is supposed to go only to the TV set through "TO TV" connector. *How much signal*? We measured +35 dBuV while same modulator at "TO TV" output measured +70 dBuV.

In soliciting comments from installers we received the following:

"*I think the Zenith IRD* is easier to set up although it appears the Pace IRD operates better."

"*I am terribly disappointed* that we do not have S-VHS output and may try to matrix my own S-video from the RGB output provided. On the other hand, the video 'quality' I see, as a professional in the business, is so poor that I'm not sure having it in 'S' would really improve the on screen detail when I am done. Perhaps realisation that compression has reached the state where bandwidth conservation is more important to the corporate financial 'bottom line' than viewer satisfaction ultimately caused them to leave the S-VHS connection off the IRDs and out of the SCART lines." (SatFACTS has seen a Sky Latin America IRD and it included two complete RCA A/V output sets, and the promised but not delivered S-VHS output - but, no SCART sockets.)

"*Most of the people seeing* Sky Digital are reacting very positively. 'Look how bloody clear that is!' is typical. But there is an under current of resentment represented by, 'This is a hell of a lot of money to spend just to continue getting the Rugby that we used to get free to air!'."

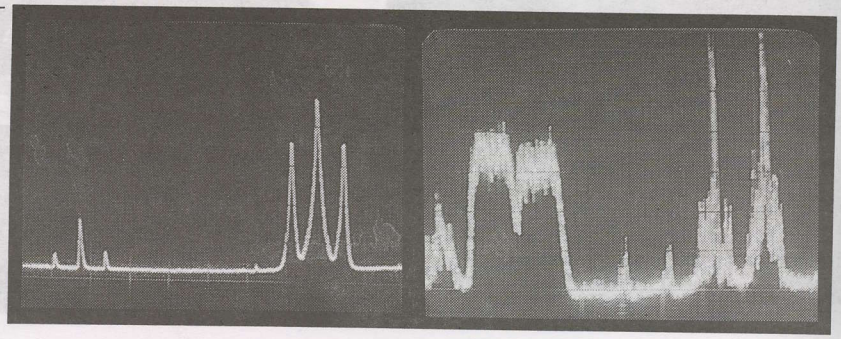
"*I was concerned* that something I was doing was incorrect when I found roughly one IRD in 5 was inoperative out of the box. But then I talked with (name of technical person at Sky NZ) who told me, 'There are more than enough IRDs coming back faulty from other techs'."

The Zenith vs. Pace Differences

The official line is that "*all of the IRDs designed for News Corp followed the same specifications and the only difference is cosmetic.*" Not quite. Pace version IRDs use the latest generation LSI 'DBS' chips, Zenith use chips sourced from another supplier. You have to but take the top off a Pace and a Zenith to compare the two and see each manufacturer has approached the Worldbox using its own resources.

One very glaring difference is the "Operating Instructions" provided with the IRDs. Pace reads as if they expect the user to have a degree in semi-advanced electronics. The 18 page booklet is poorly written, not well presented and encourages nobody to read it through. The Zenith "Operating Instructions" is, by contrast, a work of art. Pace is on A4 size sheets, Zenith turns theirs into a half-sheet size booklet totalling 48 pages. Pace's "Your Remote Control" page uses a dirty (black and shades of grey) halftone photo of a remote control; Zenith created a line drawing. No, the halftone Pace photo and the Zenith drawing (and remote) do not agree - *these are two* different *remotes* (so much for "everything is the same but the front panel cosmetics" story).

Pacific-Asia readers are more likely to encounter the Zenith version than the Pace (outside of New Zealand) if our advance warning concerning Star Asia Digital is correct. Ands one day, *even Australia* will have Worldbox IRDs. We *all* have a great deal to relearn .



UHF modulator in Worldbox has typical "extra" outputs (first photo); 32 dB below primary output (right) is second output 50 MHz lower in frequency. Same "extra" output repeats past 1500 MHz. Right, original twin digital L-band signals (left side) and analogue X 2 (right).

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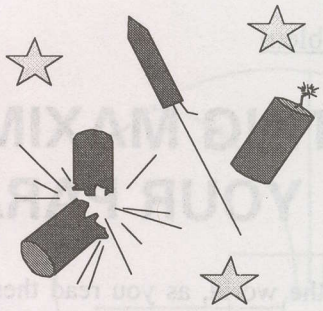

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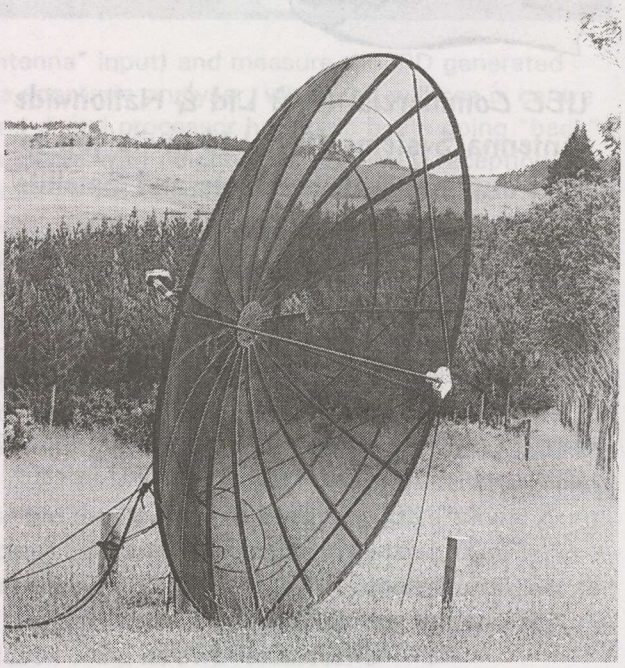
Wind is NOT the big problem

GETTING MAXIMUM SERVICE LIFE FROM YOUR PARABOLIC REFLECTOR

Someplace out there in the world, as you read these words, a strong wind is beating the stuffing out of somebody's pride a joy - a parabolic reflector. Within the hour, it will fail creating a several thousand dollar liability out of what minutes before was an asset. *Surprise*. Wind is not the major enemy of parabolic dishes.

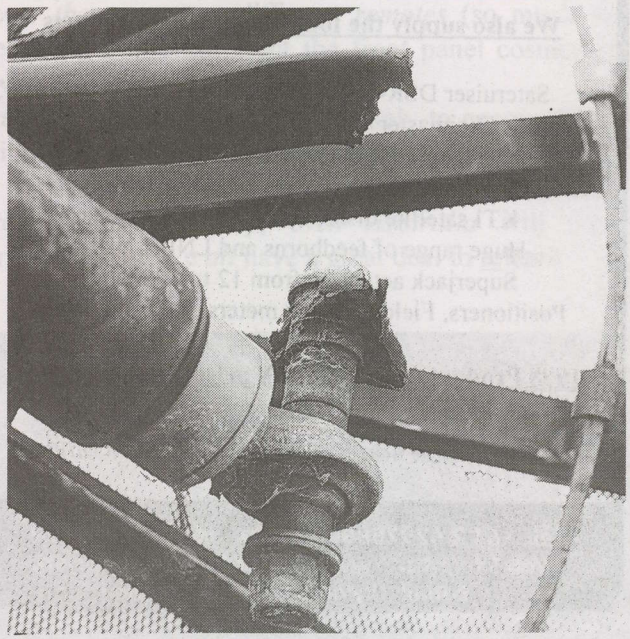
In the photo to the right, a popular brand, well designed 3.7m dish is lashed to the 3.5" thick wall support pipe with ropes secured as 120 km/h winds rock and rolled to the beat of mother nature. This is "post storm." The dish was at low look angle (13 degrees elevation) which placed the majority of the surface area perpendicular to the wind. The wind in this storm came from directly behind the dish, blowing left to right against the rear dish surface. This placed maximum stress on the mechanism attaching the actuator drive end to the dish's azimuth drive rod. The storm had averaged in excess of 120 km/h for several hours with peak gusts above 150. The dish had been in service 40 months.



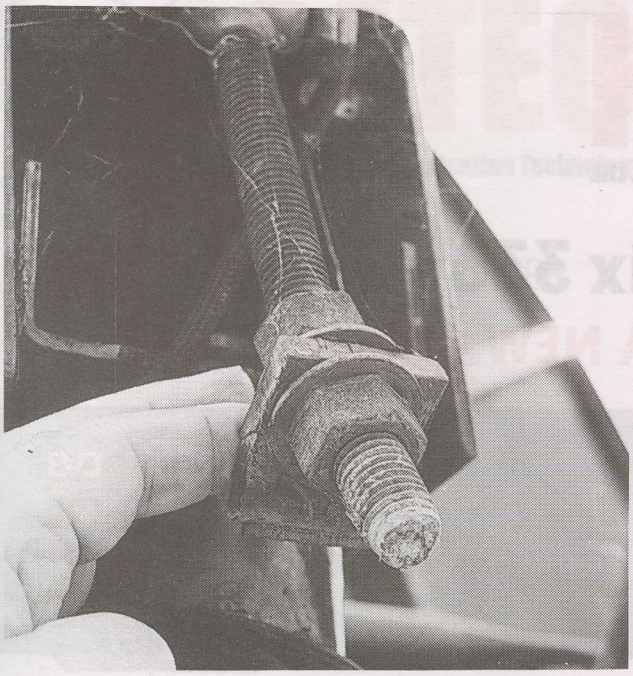
120 km winds beat this 3.7m dish to the ground after snapping azimuth and elevation adjustment hardware like twigs in a breeze. (SPRSCS '98 attendees will recognise this dish as the one we used in the tree trimming/attenuation exercise!)

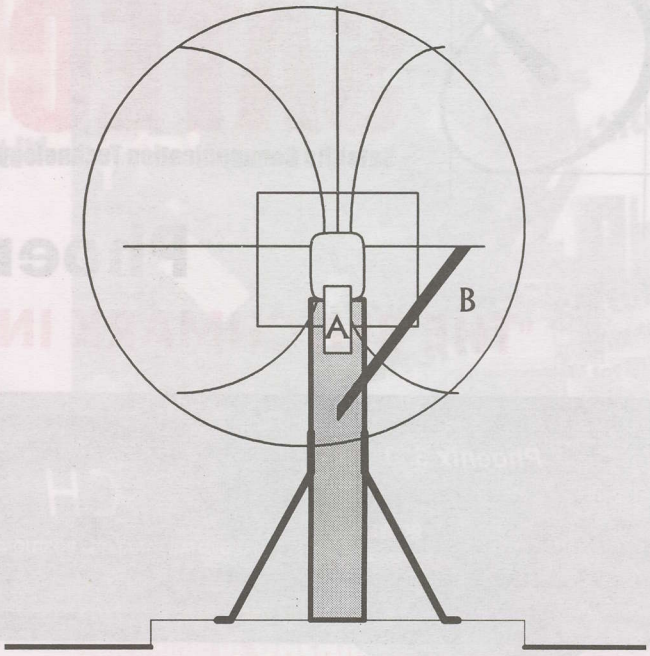
Ultimately, there would be two levels of damage. It was 6AM when the broken actuator drive connection was first spotted and the dish was whipping east - west in the gusting wind. As we battled the strong winds and rain with emergency tie-down ropes to halt the whipping, damage number two occurred (see photo top left, next page).

Dishes collapse under strong winds because of improper design and/or inadequate field maintenance. Mesh dishes employ separate panels for each segment of the quasi-parabola reflector. Some dishes "swage" the perforated metal reflector panels in place in grooved slots; others use "clips" or metal tie-down "strings" to secure the reflector to the support structure. This dish used a combination of "swaging" and "clips" to secure the reflector panels. Typically, dishes with no clips will "pop" the panels when winds reach 100-120 km/h - that's



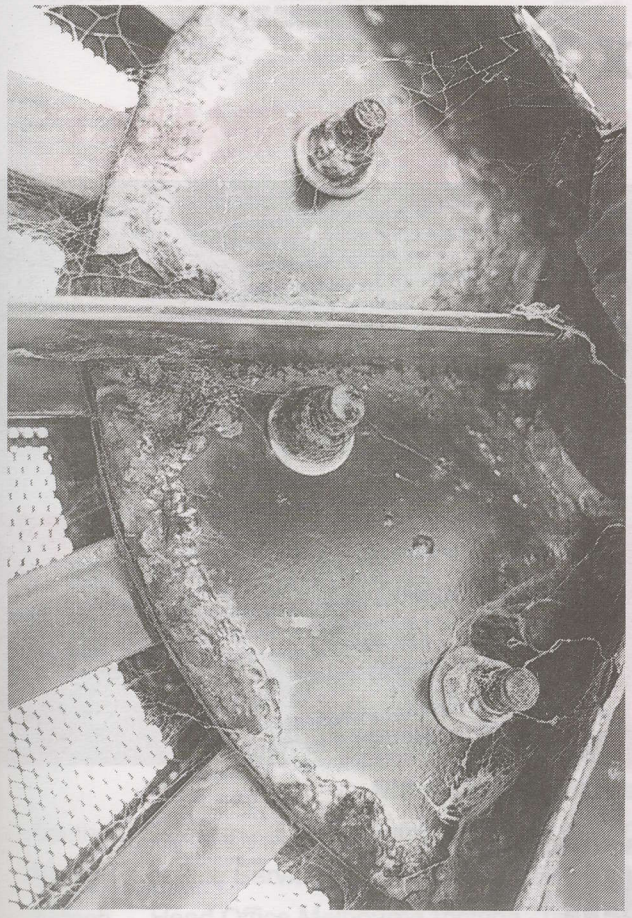
Two views of "what went first" - swaged (crimped) segment of azimuth movement pipe (at end of actuator) simply snapped in two freeing dish which wind whipped driving end of actuator through reflector surface destroying two panels.





Two points are subject to mechanical failure because of wind stress - the adjustment of elevation (a setting typically done once at time of dish installation if the dish uses a polar mount) and the azimuth (east-west) drive mechanism. In photo left, 13mm diameter threaded elevation set rod anchor, at base (ground) end, has "snapped" at weld mount to lower end of dish mount. Note rod "bent" (above fingers, top locking nut) before the weld snapped (point "A" in drawing). East-west drive mechanism "weak point" is typically actuator, especially when in an extended position. In case shown here, actuator was not extended and winds broke swaged pipe (point "B") connecting movement end of actuator to dish hub (for east-west movements).

"Real enemy" is metal fatigue "excited" by rust or corrosion that weakens strength of dish (below).



not all bad provided you can find and reclaim the panels after the storm!

Dish manufacturers rate dish survival based upon worst case wind scenarios; the most vulnerable wind direction, rapidly oscillating winds (rising and falling in intensity). But - *and this is important* - they assume the metal is "new" and not in a fatigued state. Which brings us to the real culprit. Metal deterioration.

In the photo to left, this same 3.7m dish hub plate shows what happens if metal degradation gets out of hand. The dish has a "powder coat" finish - an electrostatic applied paint surface. Powder coating is notoriously poor in adhering to *edges* of metal.

Look closely at the photo - left centre. The round hub plate looks to be in "layers" - laminating. It is. All of those ugly "warts" are areas where rust has begun to eat the hub plate, typically attacking from the thin edge of the metal inward.

Now look again at the two photos on the bottom of page 14. Where the round tube that connects to the actuator broke, the metal had been "swaged" (compressed, made flat and thin). This weakened the steel, and left non-powder coated entry ways for the moisture to get in. This tube "rotted" from the inside out. at the swage. Once rotted, it never had a chance.

Antennas - continues page 18

SATECH

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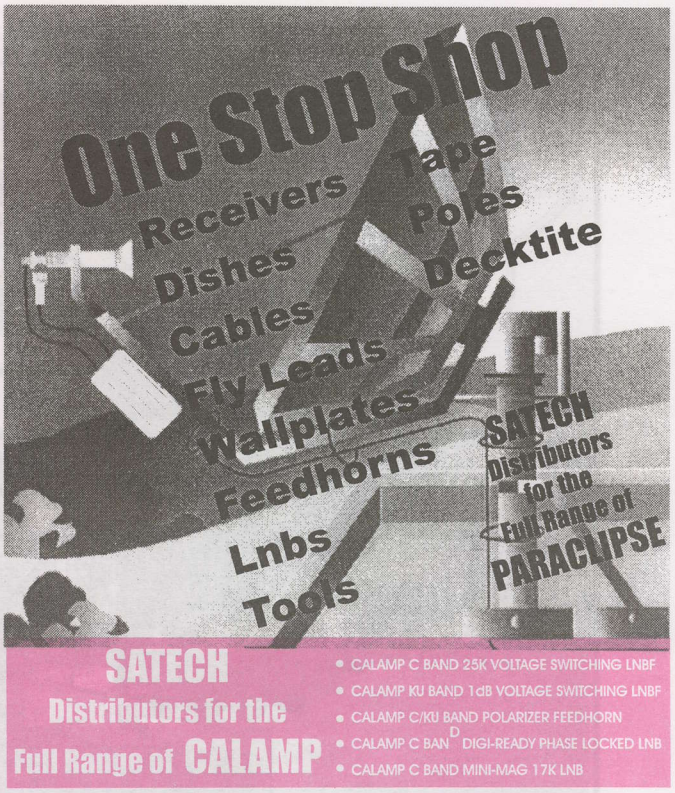

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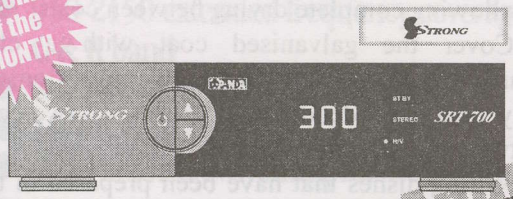
- CALAMP C BAND DIGI-READY PHASE LOCKED LNB
- CALAMP C BAND MINI-MAG 17K LNB

SPECIAL of the MONTH



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Analog

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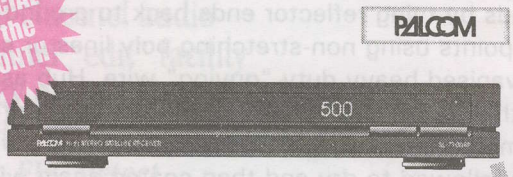

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- Auto Focus
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Analog

Palcom SL7700RP

wall plates

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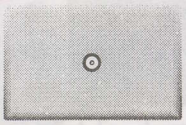
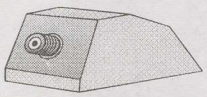


Single "F" outlet plate with bracket
SC1301



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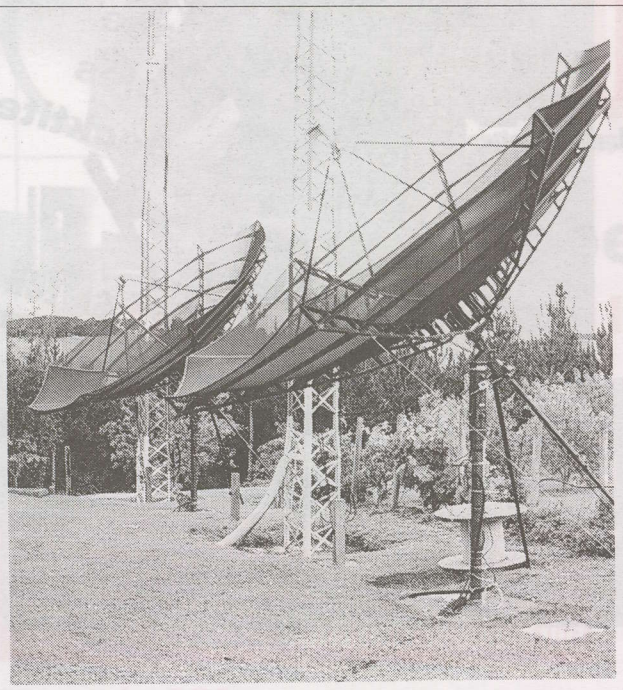
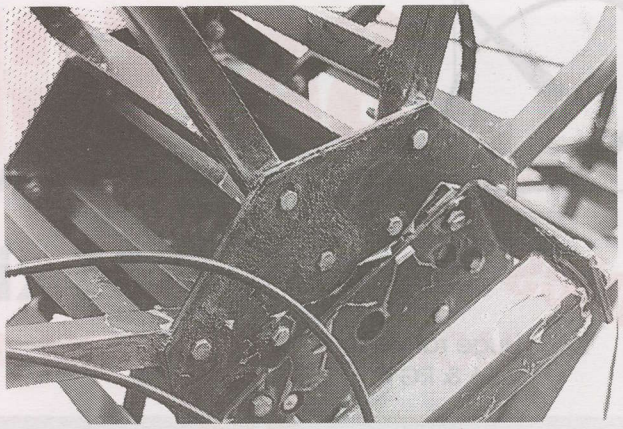
Antennas - continues from page 15





And the second break, on the elevation adjustment all thread? Once the dish was whipping back and forth in the gusty winds, the pounding on the weld point bent the all thread (imagine that!) and finally it broke off.

The message here? Dish maintenance. Experienced dish people do the following:

1) On older dishes: File, grind off all rust taking the surface back to bare metal. Then, on a factory new or rebuild -

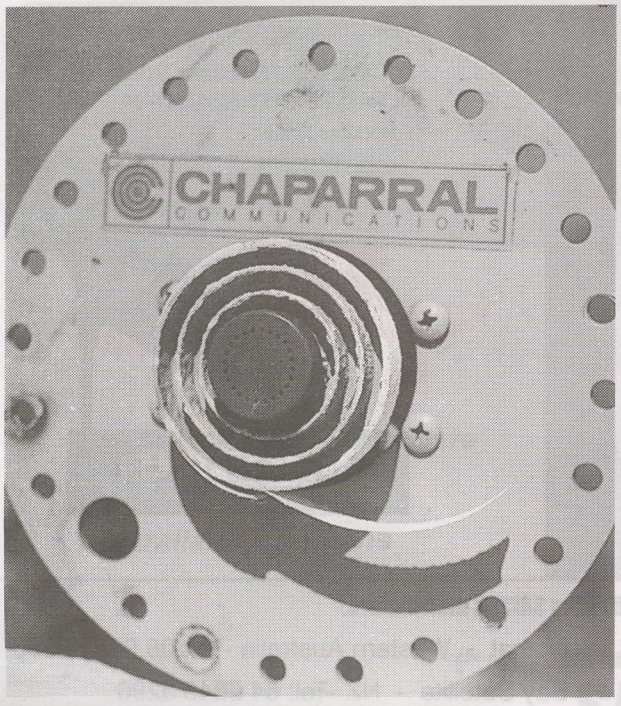
a) Paint two (or more) times with a galvanised rust protector, allowing complete drying between coats.

b) Cover the galvanised coat with a clear polyurethane, two coats, drying between applications.

c) Finally, coat with (deodorised) "Fish Oil," two coats wiping between the first and second.

2) On existing dishes that have been prepared in this fashion, inspect every six months for signs of rust. At inspection time, repair (back to bare metal) any rust spots, and if there are none, reapply one coat of galvanised followed by one of clear poly followed by two of Fish Oil. Dishes fail for a reason - your job is to eliminate all of the reasons before the dish comes apart!

4.5m mesh dishes can be held rigid in 120 km+ winds by tying reflector ends back to ground anchor points using non-stretching poly lines or even galvanised heavy duty "guying" wire. Hub assembly on this 4.5m dish (upper, right) has been sprayed at 6 month intervals with clear "Spray Kote" which is allowed to dry and then coated again with (deodorised) "Fish Oil." Products available to protect dishes are shown below (lower, right). "Powder coating" of antenna parts may not be satisfactory as feed (below) shows (it peeled off in layers, allowing the metal to corrode raising irregularities on the normally smooth metal surfaces - thus impeding the flow of microwave signals).



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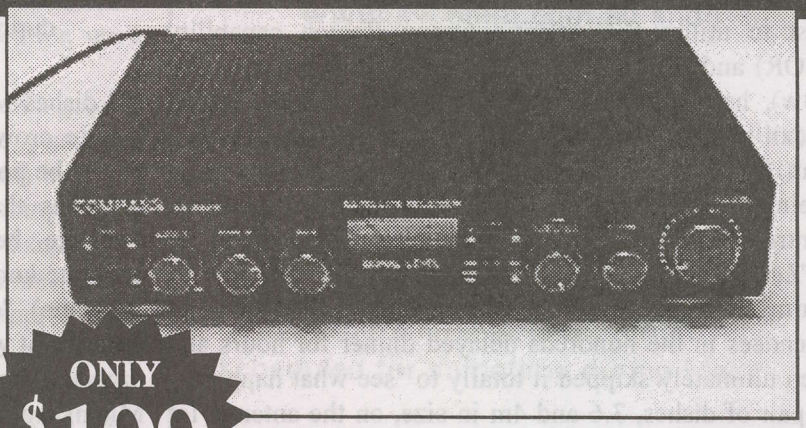

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A trade association for users, designers, installers, sellers of private satellite-direct systems in the Pacific Ocean & Asia Regions

First Ever - Intelsat Reception

The year was 1980, the location Miami (Florida, USA) and the event was the second gathering of satellite TV enthusiasts in North America. Home TVRO was new - so new that although interest was very high in the subject (more than 800 people paid money to attend the Miami gathering), fewer than 1,000 "home dish systems" existed in the world. Virtually all of those were in North America, many "kluged" together by experimenters driven with an incalculable desire to be "the first" in their town (county, state) to have access to the elusive microwave television service.

All reception was by way of US and Canadian domestic satellites - C-band birds created for the specific purpose of covering only the North American continent. But out there in space were other satellites, also operating on C-band, and of a much different design and purpose. Intelsat satellites were, in 1980, just beginning to be used for domestic TV relay. Brazil was one of the first to utilise the Atlantic Ocean Region capability (AOR) and the IV (4th series) birds delivered spot (29 dBw), hemi (26 dBw) and global (22 dBw) patterns. Brazil was utilising a 26 dBw pattern, powered by a 5 watt TWTA amplifier and the signal level in Miami (being in the opposite hemisphere and west of beam centre) was calculated to be in the region of 22 dBw.

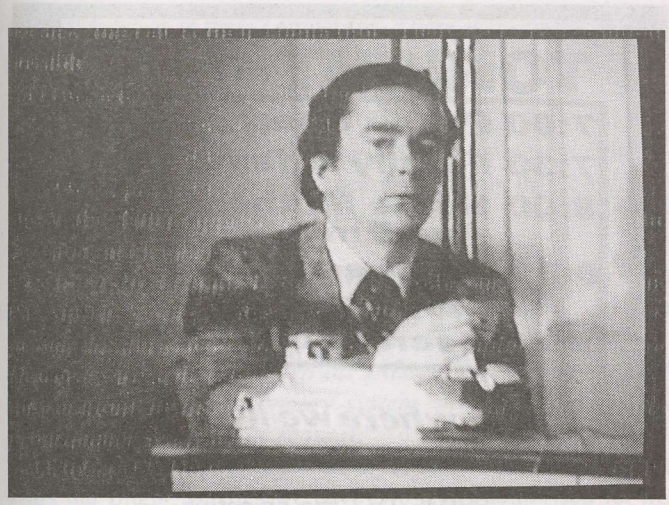
"*Let's see if we can get Intelsat!*" was the battle cry. A warm February night descended over Miami and attendees in the hundreds delayed dinner for hours and then ultimately skipped it totally to "see what happens." A pair of dishes, 3.6 and 4m in size, on the antenna lot (15 dishes were on display) were quickly commandeered by the crowd who wanted to see if Intelsat reception would be possible. It had never been done previously by antennas that small, out of the footprint and in the opposite hemisphere from the beam centre. Even accurate knowledge about the Intelsat footprints was (at the time) "classified" and nothing was known about polarity (it would turn out to be RHC) nor frequency. *So picture this* - several hundred people in downtown Miami crammed around two side by side dishes as the

It happened in 1980 during second satellite industry trade show, on a parking lot at the Miami (Florida) downtown convention center. Those who were in attendance will never forget the excitement - *you* will have to be satisfied with the videotape shot during the event (on SPR later this year).

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer."

All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) next March in New Zealand. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 34, this issue of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.



Man who "invented" petalised dishes - Robert Taggart was involved in Stanford University project during ATS-6 experimental satellite programme.

competing antenna suppliers rushed to be the first to locate the elusive signals. The challenge was - "*Find a TV signal from any non-American satellite.*" One group decided to go for a Russian inclined orbit bird because a 30 watt transponder was judged to be more powerful. The second simply went "fishing." There was no such thing as a polar mount, no mechanical actuators, no circular polarity feeds. The exact location of the satellites was not known, the frequency of the transmissions a mystery. Dishes were nudged a fraction of a degree at a time, in elevation and azimuth, by willing volunteers fuelled with cases of cold beer and their own enthusiasm. Several hours into the hunt, the crowd was bigger - not smaller (curious non-satellite people passing by the downtown Miami location were quickly infected by the group's excitement).

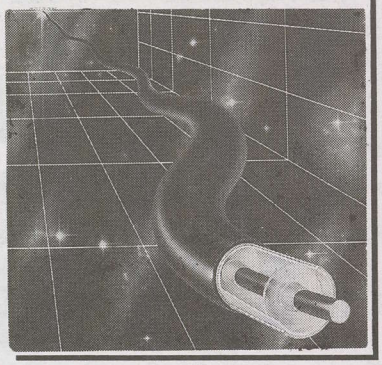
Then a flickering frame bar. Nudge the dish a quarter inch, repeak the feed, as the prototype receiver's designer (Andy Hatfield of Virginia's Avcom) hunched over the receiver's IF amplifier string tweaking filters and adjusting voltages with a VOM in one hand while staring trance-like at the TV monitor. With a measure of success at hand, the elevation angle and approximate dish azimuth was quickly measured by the competing group and their dish moved to the same spot in the sky. Thirty minutes passed, filled with excitement as each dish adjustment and receiver tweak gradually improved the images. The sound was soon "P5" and eventually the picture settled into what we would today call a "P3."

TV cameras rolled as a TV network film crew documented the event for later release across America. Finally, a station break - to this point only the language was a clue and nobody could be certain what it was!

"**TV Globo**" flashed on the screen followed by appreciative "oooh" and "aaah!" sounds. It was the Brazilian national service, actually watchable in far away Miami on a home style dish - the first documented reception from Intelsat (coming to a SPACE Pacific Report and your home dish later this year).

See page 34 and inside back cover for SPRSCS '99 details

The CABLE Connection



How NOT to Authorise an SA 9223

The Scientific Atlanta D9223 PowerVu IRD has been troublesome for PanAmSat users from its first appearance (SF June 1996, p. 6). The 9 series IRDs (9223, 9225, 9234 and others) have been designed for one purpose - to process the proprietary to Scientific Atlanta not-DVB-compliant digital data stream, and to allow programmers to transmit secure television programming to authorised users.

This is a report of what this means in the *real* world if you find yourself needing access to a PowerVu service, possessing one or more appropriate PowerVu IRDs and being unwilling to spend money for an additional PowerVu receiver because you already own one capable of doing what you want done.

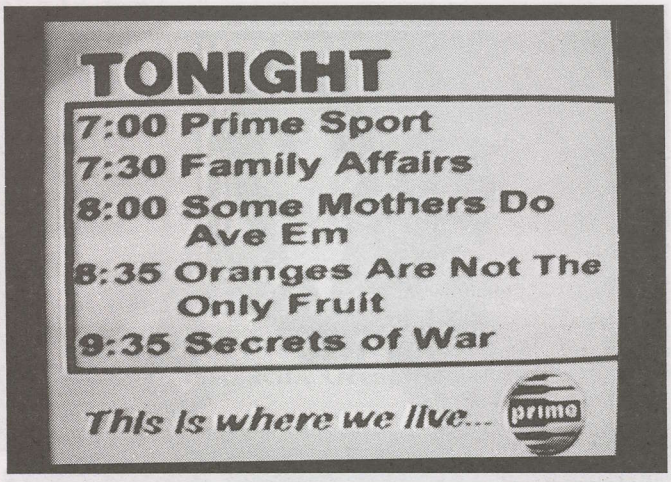
The situation: New Zealand's latest terrestrial TV network, Prime TV, is scheduled to turn on late in August. They have elected to distribute Auckland originated programming to eight transmitter sites throughout New Zealand using satellite. For their satellite link, they go to competitive terrestrial broadcaster TVNZ (Television New Zealand) and ask TVNZ's technical arm - BCL - to arrange a satellite link. BCL has their own uplinks in Auckland and through TVNZ controls several SCPC chunks on Intelsat 180E. They calculate 7m range dishes fed through 180E will provide the headroom necessary.

But - 180E and the TVNZ SCPC channels are capable of reaching virtually the entire Pacific. Prime TV, on the other hand, has purchased programming rights (to movies, sitcoms, sports) that include *only* New Zealand. The terrestrial TV service has to be assured its satellite link will not reach users outside of New Zealand to protect its programmer copyrights and agreements.

BCL decides for reasons unclear to utilise PowerVu encryption which automatically means PowerVu receivers.

You want to carry Prime TV on your (in New Zealand) cable system, and looking through your headend locate a trio PowerVu IRDs which are presently authorised (by programmers) for a single pay TV service. One of these is used for EWTN - a free to air service, although PowerVu - and you decide to ask that the EWTN IRD plus a backup IRD used for CMT be accepted for Prime TV use. The TID and UA numbers are transmitted to Prime TV's Managing Director (Trevor Egerton) who has agreed your cable system can take the satellite feed. He in turn hands the information to his Chief Engineer, Phil Skaggs. It is 16 July 1998.

Skaggs is overloaded with getting the new TV network on the air, and the matter slips until just days before the Prime terrestrial service is to begin. You prompt him with a fax and he routinely asks BCL if your UA and TID numbers have been



PRIME TV - the objective
at the end of a verrry long trail

"recorded" for authorisation. There is silence at BCL and it is August 20th.

September 1. Prime TV is on the air, but your PowerVu IRD says you are not authorised. The BER is in the -3 region, not spectacular but acceptable. You go back to Egerton in writing.

September 22. Egerton responds and advises there will be a fee (NZ$150) payable to Prime because SA says they have "*costs associated with processing the request.*" You agree to pay.

September 30. Prime advises they have run into a roadblock at SA. The write, "*After several frustrating phone calls/faxes, we conclude the best person to assist you in the process is Elizabeth Jennison at SA Sydney.*" They include a fax from Jennison that outlines the problems. In part, it says:

"*If the customer no longer wishes to receive the original program or has sold their unit, they need to provide SA-Australia with (1) A letter of authority from the original programme provider requesting that IRD be deleted from their database; (2) A letter of authority from the new programmer (ie. Prime) requesting SA to release the IRD to them. If either of these programmers disagree, the customer will need to purchase an additional (SA) unit.*" There was more. "*If the customer does not wish to go through this procedure, the unit can be returned to SA-Australia at the customer's expense and SA will undertake a chip change. The original TID and UA numbers remain the same, only the RN number changes within the box. SA will charge USD$150 for each chip change processing.*"

September 30. Prime issues a letter to SA authorising the switch of the IRD to their service. Despite Skagg's suggestion, SA Sydney is unable to supply information regarding getting the original programmer's permission for the switch and we are at a stand still. Three weeks pass.

October 22. Jazmine Latorre, PanAmSat in Homestead, Florida (tel ++1-305-247-7055) finally acknowledges responsibility for resolving the problem. She writes:

"*Unfortunately, PanAmSat will not be able to share the SSN* (secret serial number) *information with Prime Television New Zealand. Prime transmits their signal via an Intelsat satellite and PanAmSat does not share IRD databases with Intelsat.*"

We had asked for a "shared" two-service IRD approval; such as CMT and Prime or EWTN and Prime. The concept was to shift a "spare" IRD from non-regular use on PAS-2 to regular use on Intelsat 180E, but not lose the backup ability of the IRD in the process. PanAmSat refused to do this - essentially

because Intelsat is their competitor. There were two solutions possible:

1) Buy a new PowerVu just for Prime, or,

2) Have either the spare CMT IRD or EWTN IRD removed from the approved list for the original programmer, and then it could be approved for Intelsat reception of only Prime TV. We chose the latter approach and advised Ms. Latorre of this decision on October 23.

October 26. Jazmine Latorre wants to be sure we understand PanAmSat "policy." She writes, "*We will not share decoders in our database with another system that uplinks to Intelsat. However, we will relinquish all IRD control (including SSN information) to the secondary system, provided the original programmer sends us the request.*"

October 27. Hugh Hickerson at CMT (++1-615-316-6149) hears our plight, verifies we have two IRDs authorised for his service, sees no problem in having one of these "deauthorised."

November 2. Jazmine Latorre writes, "*We have received approval from Hugh Hickerson .... and now require a letter from Phil Skaggs directed to Ms. Maria Georgiou of Scientific Atlanta Canada (fax ++1-416-321-7690) requesting specific approval for IRD number (XXX). Previous letters requested permission for two IRDs and we will be accepting only the unit approved for transfer by CMT.*"

November 3. Prime's Phil Skaggs reports to Maria Georgioux, "*On behalf of Prime Television New Zealand Ltd., I hereby give approval for this IRD to be authorised for Prime's service.*" We hope nobody side-tracks this fax when they notice Phil has added an "x" to Maria's unusual last name.

November 10. The long anticipated notification from Skaggs. "*We have received your IRD SSN diskette from S-A and have loaded it into the uplink database. The SSN file from your diskette is merged into the decoder database in the S-A control system so your IRD's authorisation key will be transmitted ad infinitum approximately every 20 seconds. Please note the IRD set-up relating to 'non PowerVu mode' - we found we couldn't use the full PowerVu configuration due to some incompatibilities between S-A's and the NDS MPEG implementations (the TVNZ Satellite Services modulator is from NDS).*"

Sure enough, we had authorisation and Prime TV went onto the cable system on cable channel 17 - right after (NZ) TV1, TV2, TV3, and TV4; all five NZ terrestrial services consecutively placed on the cable subscriber's set-top converter tuning mechanism.

Summary. In case you got lost in this series of exchanges, the basic fact is the PowerVu IRD you have bought and put into service "belongs" to the "programmer" for whom it was originally authorised. Any change in use of the PowerVu receiver, to another PowerVu encrypted service, requires that the first programmer "sign off" the IRD and that the new programmer "sign on." Lacking permission from either, your IRD is stuck forever on the service of the first programmer. Unless - you are willing to return the IRD to SA Sydney where they will change out a chip which allows the "RN" to be moved to a new service provider. You will pay for this privilege, including freight in both directions. And if the PowerVu was originally intended for PanAmSat service, and is being moved to a competitor of PanAmSat - well, go back and reread what we went through! It is not impossible to do - and by reading this you won't waste time learning the special rules which apply that we had to learn the hard way. You may "own" a PowerVu receiver; you do not "control" it.

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 January 1999

BIRD	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
I703/57E	Sky News (BSkyB feed)	4187/963R 4140/1010R	1 1	3/4 3/4	5(.632) 5(.632)	NDS encrypted
	Occ. feeds	4055/1095L	1+	3/4	27(.500)	FTA (global beam)
	CNBC	4018/1132L	1	3/4	6(.000)	Feeds-FTA SCPC
	CNBC	3795/1355L	1	2/3	6(.000)	Asia-Europe feeds-FTA SCPC
I704/66E	**TV5**	4055/1095R	4	3/4	27(.500)	FTA
	Sky News +	3805/1345R	4	3/4	22(.520)	Sky News 24 hr, sport, feeds **FTA?**
	CNBC	3795/1355L	1	2/3	6(.000)	FTA SCPC
PAS4/68.5E	**Nickelodeon +**	4147/1003H	1 reported	1/2	24(.000)	Testing; also try 26(.000)
	BBC	3743/1407H	5	3/4	21(.800)	FTA; 2 audio channels?
	CCTV	3716/1434H	up to 6	3/4	19(.850)	FTA
Ap2/76E	**C-Net Taiwan**	3695/1455V	10TV	5/6	21(.088)	FTA - temp only
	HMark/**Kermt**	3720/1430H	4	3/4	19(.510)	PowVu typ CA; Kermit **temp FTA**
	Baccarat	3836/1314H	1	3/4	3(.184)/6(.111	FTA
	TVB-8 +	3849/1301H	4	3/4	13(.238)	PowerVu CA
	Disney	3880/1270H	3	5/6	28(.125)	PowVu CA
	AXN	3920/1230H	up to 8	7/8	28(.340)	Tests, promos, **some FTA**
	Vietnam	12.696V	1	3/4	3(.516)	FTA national service
Thcm3/78.5E	**ITC**	3569/1581H	1	3/4	10(.200)	FTA
	MRTV	3666/1484H	1	2/3	4(.442)	FTA; difficult to load
	UTV	3920/1230H	6	3/4	26(.662)	Irdeto CA - inactive?
	UTV/MCOT	3880/1270H	8	3/4	27(.500)	Irdeto CA - inactiuve?
	Maharishi	3600/1550H	up to 8	3/4	26(.662)	FTA - short hours?
	Myanmar TV	3666/1484H	1	3/4	4(.442)	FTA - may be only test
	TV Maldives	3460/1690V	1	3/4	6(.312)	FTA Asian beam -now reg svc
	Thai Global +	3425/1725V	up to 7	2/3	27(.500)	FTA
As2/100.5E	**Chinese Tests**	12.295,329H	1TV each	2/3, 1/2	6(.103/.930)	FTA (mainland only beam)
(#1)	**Euro Bouquet**	4000/1150H	6TV,12r	3/4	28(.125)	FTA
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	FTA SCPC
	Hunan/SRTC	3847/1303H	1	3/4	4(.418)	FTA SCPC
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	FTA SCPC
	Inn Mongolia	3828/1322H	2	3/4	4(.418)	FTA - #1 Chinese, #2 Mongolian
	APTN A-O	3799/1351H	1	3/4	5(.631)	FTA SCPC
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	Mostly CA SCPC, **some FTA**
	WTN/Reuters	3775/1375H	1	3/4	5(.631)	**Some FTA** SCPC
	Reuters M-E	3770/1380H	1	3/4	5(.632)	**Some FTA** SCPC
	Liaoning/Svc2	3734/1416H	1	3/4	4(.418)	FTA SCPC
	Jiangxi/JXTV	3727/1423H	1	3/4	4(.418)	FTA SCPC
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	FTA SCPC
	Quinghai TV	3713/1437H	1	3/4	4(.418)	FTA SCPC
	Henan /Main	3706/1444H	1	3/4	4(.418)	FTA SCPC
As2/100.5E	Sky Racing	4020/1135V	3	1/2	18(.000)	NDSDVS211 CA (**ch.3. occ. FTA**)
	EMTV	4006/1144V	1TV, 2radio	3/4	5(.632)	PowVu CA-very poor signal level
	KIBC	3940/1210V	1TV, 4 data	2/3	26(.655)	FTA 1 video ch; ZakNet data CA
	STAR/ISkyB	3900/1250V	19TVw/3744	7/8	26(.845)	NDS CA (Pace DVS211)
	BSkyB	3865/1285V	8+	7/8	26(.845)	NDS CA (Pace DVS211)
	HeiLongJiang	3834/1316V	1	3/4	4(.418)	FTA SCPC
	JSTV	3827/1323V	1	3/4	4(.418)	FTA SCPC
	Shaanxi/QQQ	3813/1337V	1	3/4	4(.418)	FTA SCPC
	Guang GXTV	3806/1344V	1	3/4	4(.418)	FTA SCPC

BIRD	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers & Errata
(As2/100.5E)	**Fashion TV**	3796/1354V	1	3/4	2(.533)	Temp FTA- see notes p. 6 here
	Eastern TV	3785/1365V	5	3/4	18(.000)	PowVu CA -**#5 FTA**; off-air?
	Myawady TV	3766/1384V	1	7/8	5(.080)	FTA SCPC - difficult
	STAR/ISkyB	3744/1406V	35TVw/3900	7/8	26(.845)	NDS CA (Pace DVS211)
	Star TV Sports	3700/1450V	5	3/4	27(.500)	NDS CA (Pace DVS211)
Gz 25/103E	**STS TV**	3720/1430R	1	3/4	6(.500)	Pgming +7hrs Moscow
Cak1/107.1E	Indovision S- band	2.536, (.566, .596, 2.626)	up to 8 per transponder	5/6	20(.000)	RCA/Thomsom IRD. Highly erratic, see p. 29 this issue
Sinoat 1/110E	**TVB Jade**	4106/1044V	1	2/3	4(.443)	FTA SCPC-difficult to load
C2M/113E	Mega TV	3780/1370V	5?	3/4	27(.500)	unknown encryption format
	Star Indovisi'n	3500/1650H	20w/3580?	7/8	26(.850)	Shut-down for now
	C Net Taiwan	3760/1390H	10TV, 10 r	5/6	21(.091)	FTA to Feb 1? See Ap2R also
JcSat3/128E	NIC-J/GAOR	3985/1165V	1 or 2	1/2	6(.109)	Poss PowVu, test
AP1/138E	**Reuters**	3732/1418V	1	3/4	5(.632)	FTA SCPC
	Reuters	3742/1408V	1	3/4	5(.632)	FTA SCPC
	Taiwan Bqt	3800/1350H	up to 8	3/4	26(.697)	FTA MCPC
	MTV	3860/1290V	1	3/4	3(.000)	FTA SCPC
	Laos Nat. TV	3924/1226V	1	3/4	2(.522)	FTA SCPC
	CNNI	3980/1170V	2+	3/4	26(.000)	CNN FTA
Optus B3/156	Aurora	12.595V	10+, 9 radio	3/4	30(.000)	CA, $50 smart card required
	Aurora	12.407V	10+, 9 radio	2/3	30(.000)	CA, $50 smart card required
	Optus Vision	12.438/626H	10TV	3/4	29(.473)	7 pgm svcs not shared
	Austar/Foxtel	12.438(.626, .688)	25TV, 11 radio	3/4	29(.473)	DGT400 CA except #24
Optus B1/160	Sky NZ	12.391,(418)V	7 + 7 +4	3/4	22(.500)	NDS CA, 12.391 primary
	Imparja feed	12.367H	1	3/4	5(.424)	may be temp feed to Aurora
PAS-2 169E	GWN Perth	12.265V	6TV, 7 radio	1/2	16(.200)	PowVu CA (D9234)
	Telstra Bend.	12.300V	2	1/2	21(.997)	PowVu typ. CA (D9223 only)
	Yumin/Taiwn	12.325V	1+	3/4	8(.888)	reported FTA-China beam
	IHUG (NZ)	12.408V	0	3/4	5(.333)	Internet data:
	IHUG (NZ)	12.448H	0	3/4	20(.555)	No service table; (video tests)
	ABC Interchange	12.629, (.638, .646)V	1 TV each	3/4	6(.980)	format PowVu, nominally FTA; recent changes
	Mediasat	12.655V	1TV	1/2 & 3/4	6(.610)	FTA, occassional service, feeds
	Maharishi	12.664.5V	1TV	1/2	3(.300)	FTA, strong to NZ
(#2)	HK PowVu	4148/1002V	up to 8	2/3	24(.430)	PowVu, mostly CA, **some FTA**
(#3)	**NBC HK**	4093/1057V	5 typical	3/4	29(.473)	Philips mux format FTA
	JET Singapore	3962/1188V	2	1/2	13(.740)	PowVu CA
	ESPN USA	3860/1290V	7TV, 2 data	7/8	26(.470)	PowVu CA; avoid #8,9 w/9223!
(#4)	**Middle East**	3778/1372V	4	3/4	13(.331)	FTA -0hard to load
	Service 1	3761/1389V	1	3/4	6(.620)	occ feeds, FTA SCPC
	BBC + TFC	3743/1407V	5	3/4	21(.800)	PowVu; CA and **FTA (BBC#3)**
(#5)	**CCTVPowVu**	3716/1434V	4 typical	3/4	19(.850)	FTA (# pgm chs varies)
	Feeds	4189/961H	1 or 2	7/8	6(.600)	Test cards, may be feeds
	TCS-Singap.	4183/967H	2	1/2	6(.620)	PowVu FTA MCPC
	ITJ-Jap.Tel.	4174/976H	1	3/4	5(.632)	occ feeds, FTA SCPC
	Feeds	4138/1012H	1	3/4	6(.620)	FTA SCPC
(#7)	NHK Joho	4035/1115H	5TV, 1 radio	3/4	26(.470)	1 CA (D9234), **4 FTA**
	CNNI HK	3996/1154H	1TV	3/4	9(.998)	FTA - occasional feeds
	PAS-2 feeds	3939/1211H	2 (NTSC)	2/3	6(.620/7.498)	FTA (NBA , shuttle-typ NTSC)
(#8)	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)	Some CA, **some FTA** (NTSC)

PAS-2/169E	Disney	3804/1346H	3	5/6	21(.093)	PowVu (D9234) CA
	Discovry Sing	3776/1374H	8	3/4	21(.093)	PowVu (D9234) CA
	Satcom 1-6	3743/1407H	6	7/8	19(.465)	PowVu(D9234) CA
I702/177E	AFRTS	4177/973L	8TV, 12r.+	3/4	26(.694)	PowVu (D9234) CA
	Thai Bouquet	12.650H	up to 3 TV	1/2	17(.800)	FTA, replaced Space TV
I701/180E	TVNZ Gennet	4195/955R 4186/964R 4178/972R 4170/980R 4120/1030R	1 (CA) BBC/Gennet 1 (CA) APTN-Tokyo 1	3/4 3/4 3/4 3/4 3/4	5(.632) 5(.632) 5(.632) 5(.632) 5(.632)	DMV/NTL CA, all channels occ. use, **FTA irregular** around special event coverage <was MTV Europe)
(#9)	**RFO**-Canal+	4095/1055L	up to 7TV, 5 r.	3/4	27(.500)	Canal + (2) CA; **rest FTA**
	SPN Nauru	4081/1069R	1	3/4	4(.730)	FTA SCPC; weak signal
	Baccarat	4028/1122R	1	5/6	3(.702)	FTA SCPC; NTSC, short hrs
	NZ Prime TV	4024/1126L	1	2/3	6(.876)	PowVu CA; network feeds
	RFO direct	3858/1292L	1	3/4	4(.566)	East hemi beam to Tahiti
	TVNZ TL	3854/1293R	1	3/4	5(.632)	SCPC **mixed FTA**, CA feeds
	TVNZ	3856/1294R	1	3/4	5(.632)	SCPC **mixed FTA**, CA feeds
	TVNZ	3846/1304	1	3/4	5(.632)	SCPC **mixed FTA**, CA feeds
	10 Australia	3765/1385R	6	7/8	29(.900)	PowVu CA; **#5,6 occ FTA**

Bouquets: MCPC (multiple [program] channels per carrier) MPEG-2 content frequently changes. Primary **FTA** (free to air) MCPC bouquets are as follows: 1) European Bouquet: (1) **Deutsche Welle**, (2) **MCM**, (3) **RAI International,** (4) **RTVE** (Spain), (5) **TV5 Paris** + up to 13 radio (some stereo); 2) Hong Kong PowVu: (5) **Ad Hoc NTSC feeds**, (6) **Ad Hoc PAL feeds**; (3) NBC HK (Hong Kong): (1) **CNBC Asia**, (2) **CNBC Australia**, (3) **National Geographic** [English], (4) **NBC feeds**, (5) **National Geographic** [subtitled Taiwan]; (4) Middle East [testing; (1) **Antenne 1,** (2) **Lebanon LBC**, (3) **ART Australia**, (4) **RAI Australia;** (5) CCTV PowVu: (1) **CCTV4**, (2) **CCTV3**, (3) **CCTV 9**, (4) **test bar**; (7) NHK JoHo: (1) **NTSC Japanese**, (2) **NTSC English**, (3) **PAL Japanese**, (4) **PAL English**, (5) NHK Radio, (6) NHK Premium; (8) Cal PowVu: (1) **CMT** [NTSC], (2) **Ad-hoc** [NTSC], (3) ART, (4) **EWTN** + Global Catholic Radio, (5) **BBC World** [NTSC - now off], (6) **Bloomberg Financial** [NTSC], (7) Golf Channel [NTSC], (8) Discovery; (9) RFO-Canal+: (1) Canal+ [Polynesia], (2) Canal+ [New Caledonia, (3) **Saudi TV**, (4) **Abu Dhabi TV**, (7) **TOM1**, (10) **TOM2**, (13) **TOM3** + radio on 5,6,8,9,11,12,14,15.

MPEG-2 DVB Receivers: (Data believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (reviewed SF May 1998). Av-Comm Pty Ltd., tel 61-2-9949-7417

Grundig DTR1100. Mfg by Panasat S. Africa, similar to Panasat 630; out of production, Irdeto capable (see AV-Comm, above)

Hyundai-TV/Com. HSS-100B/G (Pacific) and HSS-100C (China) FTA. Versions 2.25/2.26 good performers, 3.11 currently offered and those with Nokia tuners good performers. Version 5.0 not so good. SATECH ([V2.26] 61-3-9553-3399), Skandia ([V3.11] 61-3-9819-2466); Skyvision Australia ([V3.11, Nokia] 61-2-6292-5850).

MediaStar D7. FTA, preloaded with known services, exc. software (review SF July 1998). MediaStar Comm. Int. (61-2-9618-5777)

Nokia "d-box" (V1.7X). European, FTA, typically German menu, capable of "Dr. Overflow" Internet updates. Caution on this one!

Nokia 2000S (Asia/Pacific). Released Oct. 1998; equipped with CAM/PCMCIA slot, capable of Irdeto, others (factory will NOT supply CAMs at this time); no Asia-Pacific sources known at this time (but readily available through European sources); review 11/98.

Nokia 9200/9500/9600/9800. FTA, factory software does PowVu poorly, but has significant Internet software support. Ultimate play-around hobby machine but not consumer friendly. Original V1.63 had unique ability to search entire satellite to locate and list all SCPC/MCPC services; latest (V5.X software) versions compatible with Dr. Overflow (V8.X) software from Internet. CI (common interface) versions available in Europe,do not presently allow Irdeto however. No Pacific/Asia support; help from Av-Comm (61-2-9949-7417), and software from www.BAKKERELECTRONICS.COM.

PACE DVS-211. NDS CA only (no FTA); Sky Racing (As2), Indovision, others. (Sky Racing - Bob Pankhurst 61-2-9451-0888)

PACE DGT400. Original Galaxy (now Foxtel Sat/Austar) IRD, Irdeto, FTA with difficulty. (Foxtel Australia 1300-360818).

PACE DVR500. Original NBC affiliate IRD; FTA or Irdeto (w/CAM). Similar to DGT400, more reliable. No sources.

PACE "World Box." (DSR-620) Created for NDS non-DVB compliant MPEG-2, including Sky NZ. Info, ++49-211-526-9833.

Panasat 520/630/635. MCPC FTA, Irdeto capable. Out of production; spares from UEC (fax ++27-31-593-370, Russell Futter).

Panasonic TU-DS10. FTA, Irdeto CA. (see SF Aug. 1998). Aurora, (Antares 61-7-3205-7574; Evcom 61-2-9316-5055),

Phoenix 222. FTA, PowVu. Exceptional graphics, ease of use. (SATECH 61-3-9553-3399)

Phoenix 333. FTA MPEG-2, analogue, positioner. Available late November; review this issue. (SATECH 61-3-9553-3399).

PowerCom. FTA, PowVu, exc. sensitivity. (NetSat 61-2-9687-9903)

PowerVu /PowVu D9223, 9225, 9234). Non DVB compliant proprietary format capable MPEG-2 FTA with optional software. 9234 sold for GWN and NHK Joho PAS-2, EMTV As2 , CA access; others for various CA services. (Scientific Atlanta 61-2-9452-3388)

Praxis DigiMaster 9600 MKII/9800AD. FTA, PowVu + analogue.; (Skyvision Australia 61-2-6292-5850; Telsat 64-6-356-2749)

Praxis 9800 ADP. FTA, PowVu, analogue, positioner. (Skyvision Australia 61-2-6292-5850)

Prosat 2102S. FTA, NTSC + PAL, SCART + RCA. (Sciteq 61-8-9306-3737)

SatCruiser DSR-101. FTA, PowVu, NTSC + PAL. (Skyvision Australia 61-2-6292-5850; Telsat 64-6-356-2749)

SK888. (aka DigiSkan from Sun Moon Star). FTA MCPC, Irdeto CAM capable. (Skandia 61-3-9819-2466)

UEC 642. FTA, Irdeto built-in, for Aurora + Optus DTH. ("Mondec" rack mount industrial version) (Nationwide 61-7-3252-2947)

UEC 660. Designed to Australian pay-TV specs/smart card + mondec card slots (Nationwide 61-7-3252-2947)

YURI HSS-100C. FTA, rebadged Hyundai V.2.27 software custom to Australia (Nationwide 61-7-3252-2947)

IRD Play toys:

MK12 smart card reader, writer. Software not readily available, not recommended. (V.K. Radio Services vkradio@tbsa.com.au)

Piracy status updates: www,maxking.demon.co.uk, www.multipage.net/multi/cards/html; www.wedzboyz.demon.co.uk

SatFACTS Pacific/Asian FTA ANALOGUE Watch: 15 Jan. 1999

BIRD / Location	RF/IF & Polarity	Service	Errata
2DT/55E	3820/1330L	DD1	
I703/57E	3755/1395R	Sun Music	
	3798/1352R	RTNC	
	3980/1170R	AsiaNet	
	4055/1095R	WorldNet	VOA subcar.
	4125/1025R	TVi	
	4175/975L	Muslim	
I704/66E	3765/1385R	Tests	
	4015/1135L	Mongolia	(Secam)
PAS4/68.5E	3743/1407V	RTPi	
	3840/1310V	Home Ch.	(may be off)
	3785/1365H	CNBC	
	3864/1286V	BBC World	
	3910/1240H	Sony TV	Hindi
	3907/1243V	Maharishi	
	4034/1116V	Doordan	
	4085/1065H	CNNI	
	4110/1040H	TNT/Cartoon	
	4113/1037V	Series Ch.	
	4185/965H	MTV	
PAS7/68.5E	3470/1680V	Test Signal	
Ap2R/76E	3760/1390H	AXN card	
Thaic3/78.E	3871/1279H	TVT	
	3760/1390V	Army TV	
	3690/1460V	MRTV	
	3685/1465H	Mynamar	
	3635/1515V	RAJ-TV	Tamil
	3616/1534V	ATN	
	3576/1574V	ATN Bangla	Bengali
	3536/1614V	Punjabi TV	Punjabi
Exp. 6/80E	3672/1478L	TK Rossija	(north only)
	3875/1275L	VTV4+	(north only)
	3925/1225L	ACT/TB3	(north only)
	4125/1025L	Russia 3	(north only)
	4025/1125L	Prometei AST	(north only)
ChiStr1/87.5	3880/1270H	CCTV1, 2	P4 NSW Ntsc
CIS S6/90E	3675/1475R	RTR1	
	3875/1275R	Orbita I	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
MeSat1/91.5	3710/1440H	VTV 1,2,4	
MeSat-1/91.5E	3710/1440H	VTV 1,2, 4	
	3880/1270H	RTM-1	
Insat2B/93.5E	4163/987H	India Metro	Aust on 3.7m
	4128/1022V	Ind. National	Aust on 3.7m
	4070/1080H	India DD9	
	4080/1070V	DD7 (Tamil)	
	3970/1180V	DD9 (kan.)	
	3882/1268V	India DD1	
	3840/1310V	India DD	
	3762/1388V	India DD4	
CIS-S20/96.5E	3675/1475R	ORT	
	3825/1325R	Madagascar +	
	3875/1275R	Test Card	
AsSat2/100.5E	3642/1508H	ERTU Egypt	
	3660/1490V	Test Card	
	3680/1470H	Feeds/Iran	
	3860/1290V	Feeds #	
	3885/1265H	WorldNet	VOA Subcar.
	3960/1190H	CCTV4	
	3980/1170V	RTPi	Radio Subcar.
CIS S21/103E	3675/1475R	RTR	
	3875/1275R	Vrk.Apt	
PalB2R/108E	4000/1150H	TVRI	
PalC2/113E	4183/967V	TPI/TVRI	
	4160/990H	(France) TV5	
	4140/1010V	Brunei, feeds	
	4120/1030H	MTV Asia	
	4080/1070H	Herbalife	2100HK/NTSC M/Tu/Wd
	4060/1090V	TV Indosiar	
	4040/1110H	CNBC	
	4020/1130V	ANteve	(left air?)
	3970/1180V	CNNI	(was 3980)
	3960/190H	SCTV	(reported off)
	3900/1250V	Malaysia TV3	
	3880/1270H	Aust. ATN7	
	3800/1350H	MCM	test only?
	3765/1385H	NBC, CNBC	Feeds, Herbalif
	4042/1408V	RCTI	English subcar
AsSat-G/122E	3675/1475L	Moscow 6	Very powerful
JcSat3/128E	4080/1070V	Test Card	Covers S. Pac.
	3980/1170H	Test Card	
Ap1A/134E	3820/1330H	CETV SD	

January Alert

PAS-8 test card turned on (3860/1290H) January 9 is "homing point" for dish alignment. Also, beacon at 3700/1450 (not video). Reports (p. 34) encouraged! Cakrawarta will bear watching all month; note AsiaSat 3S launch date could be as early as February 21.

UPCOMING SATELLITE LAUNCHES

JcSat 6 to 154E delayed to January 14(Ku)
ChinaSat 8 - Jan ('99) to 115.5E, Ku + C
Gorizont 33 - to unknown location January
AsiaSat 3S to 105.5E - Feb 21 ?? (C + Ku)
Orion 3 to 139E - now firm for March 8 (C+Ku)
Intelsat K to 95E - March 12 (HP Ku)
Insat 3A - now scheduled "March"

53.2	55	57	66	68.8	76	78.5	80	87.5	88	93.5	93.5	96.5	100.4	103	105.5	107.1	108	110.5	113	120
S27	2DT	I703	I704	PAS4 PAS7	Ap2	Th3	Ex2	Cs1	St1	Me-1	In2B	S20?	As2	S21	As1 (As3)	Ct1	B2R	Ss1	C2	Th1/ 2
C	C	C	C	C	C	C	C	C,Ku	C	C,Ku	C	C	C,Ku	C	C	"S"	C	C,Ku	C,Ku	C

122	128	134	138	(139)	140	145	146	148	151	152	156	160	161?	166.5	169	174	177	180	177	148
As-G	Jc3	Ap1a	Ap1	Or3	S7	S16	Ag2	Me2	C1	A3	B3	B1	Mb1	PAS8	PAS2	I801	I702	I701	IF3	Es4
C	C,Ku	C	C	C,Ku	C	C	C,Ku	C,Ku	C	Ku	Ku	Ku	C	C,Ku	C,Ku	C	C,Ku	C	C,Ku	Ku

Ap1A/134E	3900/1250V	CETV2	
	3980/1170V	CETV1	
Ap1/138E	4160/990H	CCTV7	
S7/140E	3675/1475R	Test Card	mod. inclined
S16/145E	3675/1475R	Test Card	high inclined
	3875/1275R	Feeds, tests	high inclined
Ag2/146E	3787/1363H	GMA	poor s. eqtor
Me2/148E	4080/1070H	test card	occ. use
C1/150E	4160/990H	TPI	occ. use
PAS8/166.5	3860.1290H	PAS Napa	test card
PAS2/169E	4000/1150V	CNNI	1/2 Tr format
	3780/1370V	Feeds-Napa	
I802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
I702/177E	4166/984R	Feeds	/KBS Korea
	4187/963R	Feeds	Feeds
I701/180E	3810/1340R	Feeds	
	3841/1309L	RFO	East beam
	3845/1305R	Feeds	inc. USA
	3930/1220R	USA Feeds	Typ. encrypt.
	3975/1175R	Feeds	
	4060/1090L	Feeds	
	4130/1020L	Feeds	
I513/177W	4187/963R	Feeds	occ. use
	4166/984R	Feeds	occ. use

PAS-4/68.8	3785/1365V	Discov. India	rptd BMAC
PAS-4/68.8	3860/1290H	ESPN Indian	rptd. BMAC
Ap2/76E	3960/1190H	HBO Asia	GI Digiciphr2
C2/113E	3930/1220H	Fil. Peo. Net	GI 1.5 MPEG
PAS2/169E	3836/1314H	ABS/CBN	GI 1.5 MPEG
PAS2/169E	3989/1161V	Fox/Prime	Sa1.5MPEG

YOUR OBLIGATION: If you read and use these charts, your part is to notify SatFACTS when we get it wrong. We depend upon the input from thousands of reader/users to get it right. DO YOUR PART - let us know when we have an incorrect or incomplete listing here.

Optus B3 at 156E / Ku only

12.688/1388H	Austar MPEG	Irdeto CA IRD	list, p, 18 Sept
12.658/1358V	ABC WA	BMAC RABS	until 03/99
12.626/1326H	Austar MPEG	Irdeto CA IRD	list, p. 18 Sept
12.595/1295V	Aurora MPEG	Irdeto CA IRD	RABS, card req.
12.533/1233V	Net 9, Sky	typ. B-MAC	interchange
12.530/1230V	Herbalife	10-1000UTC	NZ beam
12.470/1170V	(School TV)	analogue	limited hours
12.438/1138H	Austar MPEG	Irdeto CA IRD	list,p.18 Sept
12.407/1107V	Aurora MPEG	Irdeto CA IRD	RABS, card req.
12.340/1040H	Imparja	BMAC RABS	until 06/99?

Optus B1 at 160E / Ku only

12.730/1430H	RHEF, NZ feeds	typ FTA anal.	occ. use
12.677/1377H	QSTV	BMAC RABS	until 06/99?
12.670/1379V	SE ABC	BMAC RABS	until 06/99?
12.644/1344V	SE ABC	BMAC RABS	until 06/99?
12.639/1339H	NE SBS	BMAC RABS	until 06/99?
12.613/1313H	NE ABC	BMAC RABS	until 06/99?
12.596/1296V	Sky Racing	BMAC	
12.576/1276H	ABC Radio	digital	
12.570/1270V	OmniCast		FM/FM
12.547/1247H	ABC feeds	typ. analogue	occ use
12.520/1220H	Net 9 feeds	typ. BMAC	
12.518/1218V	Sky NZ	NDS MPEG	Pace DSR-620
12.482/1182V	Net 10 feeds	typ. E-PAL	
12.480/1180H	Net 9 feeds	typ E-PAL	
12.455/1155V	Net 10 feeds	typ. analogue	
12.455/1145V	QTQ9		
12.448/1148H	Herbalife	10-12UTC	now off? see B3
12.391/1091V	Sky NZ	NDS MPEG	Pace DSR-620
12.376/1076H	Aurora tests	MPEG-2	CA, inactive?

Using these charts: Microwave signals transmitted down to earth by satellite are intercepted by a parabolic reflector, redirected to a smaller "feed" antenna where they are frequency shifted (down converted) to a lower intermediate frequency (IF) for carriage to the actual receiver (IRD). Some receivers display downlink frequencies at their original microwave (i.e., 3720) while others display the receiver IF (i.e., 1430). Our charts list both for ease of use. C-band IFs are calculated by taking 5150 (local oscillator or LOF) and subtracting the C-band microwave frequency (i.e., 5150 - 3720 = 1430). Ku band IFs are found by taking microwave frequency and subtracting 11,300 (LOF); i.e., 12,655 - 11,300 =1,355. LOF is marked on most LNBs; typically 5,150 for C-band, 11,300 for Ku (note: check Local oscillator frequency - LOF - on unfamiliar Ku LNB/LNBF products; may not be 11,300!). DIGITAL WATCH LISTINGS - when "service" is known to be FTA, it is **bold face**. When bouquet is partially FTA, right hand column will have **bold face** notation.

WITH THE OBSERVERS

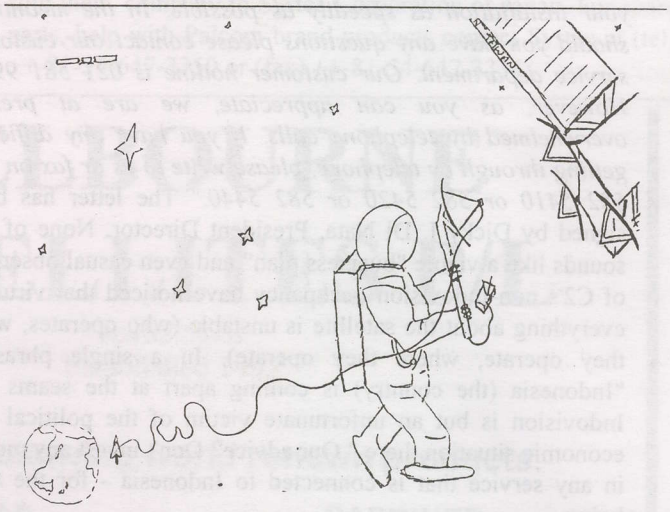
AT PRESS DEADLINE

PAS Napa slate (3860/1290Hz) on PAS-8 turned on January 9th - New Caledonia P2 on 3m, NSW P2 on 2.4m, Queensland P4 on 2.4m, eastern North Island NZ P3 on 3m, Auckland area P3 on 3m. Marshall Islands - P5 on 23' dish (better than any PAS-2). None of this is encouraging. What is not known at presstime - is this full power, what is expected beam coverage here?

PAS-8. It is on station (166.5E), but excepting occasional testing, it has not been functional. Page 4 gives the all-too-brief details. List of those services scheduled to move from PAS-2 to PAS-8 is growing - NHK is latest to announce. Users of NHK in Pacific and New Zealand could be significantly affected here - we won't know until there are stable, consistent signals available on PAS-8. NHK blames "interference from CNNI on PAS-2" as reason for move, a "dumb" reason to move (CNNI is on opposite polarity from NHK digital, 15 MHz offset in operating frequency) but anyone who has installed a dish more than once knows how to "cross pole null" the unwanted polarity. Even dumber - PanAmSat is moving NHK and CNNI to PAS-8. So if there really was interference, would not moving just one fix it??? Can you believe the people making these decisions earn US$-six-figure-salaries for their "expertise? Good grief.

Cakrawarta. It gets badder and badder. As reported (p. 2), Star TV Asia - management for Indovision - "pulled the plug" on Palapa C2 distribution of Indovision at 11.15pm Sunday December 13th. They simply turned off the authorisation data stream for all decoders sold by and to Indovision subscribers. Of interest, some quantity (not large) of Star TV personnel in Hong Kong and elsewhere reportedly continue to have the Indovision programme channels through cards issued to them by Star - not Indovision. Being an employee of Star has its perks. Indovision - the Indonesian company owned by a son of the deposed ruler - responded by arranging hurry-up distribution of S-band hardware and new cards to authorised Indovision dealers throughout the country. Some people are getting brand new 80cm dishes, others retrofit LNBFs for existing C-band dishes. Dealers were told to try to change out the existing C2 service dishes with new S-band equipment and new cards, effectively shifting the ex-C2 subscribers to Cakrawarta. Simultaneously, Cakrawarta began to load 30+ TV programme channels on anyone equipped with an IRD that could access the service (of which as many as four - seldom more - were FTA for a period of time). Then in early January, word came that the S-band service had been shut-off. Steffen Holzt (New Caledonia) reported one of the five transponders still running on January 7; then all 5 back on. We checked with some of our (many) Indonesian readers - mostly dealers in satellite hardware - and learned, "*We are still being told to convert subscribers from C2 to S-band. There is a shortage of equipment, and it is going very slowly. Contrary to reports*

"Main Attraction" pay-per-view events are now routinely scheduled on Austar/Foxtel service programme channel 13.



"*I know it's here someplace!*" - searching for PAS-8 Ku "squirt" beams. Concept and cartoon by Paul Burton, Waipu Cable TV, Waipu, New Zealand

Cakrawarta has been shut down, it has been scaled back but not shut down (yet). We are being told that there will be some level of Cakrawarta service for 2 to 3 years into the future and we should be positive in attitude when discussing this with our

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for February 15th issue: February 5 by mail (use form appearing page 34), or 5PM NZST February 6th if by fax to 64-9-406-1083.

AT Sign-off

MAGIC CARD - and "forbidden fruit" (Optus Vision via satellite). SO - what did you get for Christmas?

Cards and letters ...

Shortly after Ted Turner became a household word in America, I was sharing a cold drink with him during a cable convention. We got onto the subject of what fame means, how people who don't know you are moved to communicate as if they were a lifetime friend or relative.

"*I get cards and letters from people I don't even know!*" Ted remarked. My fame, substantial but not in Turner's league, identified with the remark. As the "father" of home satellite TV in America, my mail box was often filled with personal letters from people seeking assistance in "getting one of them satellite things." I still receive cards and letters "from people I don't know." With more than 9,000 SatFACTS readers monthly, many originate from the pen of a SF subscriber. This year one of these people sent me a "Christmas card" with a most unusual "gift" inside.

The card arrived after Christmas, indeed had been postmarked in Australia on December 31. "Season's Greetings" said the card. Inside, a piece of paper wrapping up another kind of card and a short type written note:

"*I have followed your reports on the unauthorised pay-TV card situation in Australia with amused interest. Take the enclosed old style Galaxy card and insert it into any IRD that is capable of Austar reception. Tune to channel 16 and watch Disney appear.*" As the photo here shows (taken at 10.30 AEST on the Disney Channel, January 6th - should someone care enough to verify we didn't make this up), it works on Disney. And everything else in the Austar/Foxtel package plus those "forbidden" Optus Vision channels as well.

There was a final paragraph. "*This card was created using the Mk12 reader/writer and 'Phoenix' software sourced on Internet. I started out to simply clone an Austar card and when I was done - well, you can 'see' the result.*"

Indeed I could.

It is well known but hardly public that Optus Vision, back in November, distributed a very small quantity of their own cards to some VIPs (including a popular disc jockey at radio station 2UE). It is also well known - now - that Optus has decided not to be in the DTH business, at this time, and the relatively small number of cards distributed to VIPs and scattered in Western Australia to normal consumer people reportedly are to be "turned in" by April 1st. It will be interesting to see if this particular "Christmas card" shuts down at some future point; say, April 1st.

Optus Vision DTH reminds me of Tiny Tim in the Dickens Christmas Carol. Born 'infirmed' and walking with a crutch, O-V satellite was like a crippled child attempting to keep up with the big boys that surrounded it.

Optus and Foxtel have worked out an "agreement" - see p. 30 here - and the only part that matters is that Optus Vision DTH will not happen. But what about those 7 channels of Optus Vision service "hidden away" inside of the

Austar/Foxtel digital bouquet(s) on B3? Movie 1, Movie Extra and Movie Greats are now optional-extra for the Austar package. Disney, ESPN, Sports Australia, Sports2 Australia, Odyssey, Ovation, Sky News and MTV remain on the "hidden list" (unless, of course, you have one of those "rare" Optus cards or received a Christmas "card" in the mail as I did). Their future is unknown but I am betting Disney will end up as an aftertime extra-offering for Austar. The sport channels are less likely to be available via satellite, confined to cable only.

I received another card - not the Christmas nor smart variety - as well late in December. It said, tersely:

"*All of that wasted space in SatFACTS advising people the Irdeto system had been or could be circumvented in Australia. I work for Optus at an engineering level and based upon your reports we acquired the Mk12 and software and I must tell you, SatFACTS is wrong! The system cannot be broken - with the Mk12 - and has not been broken.*" It was unsigned but postmarked from a Sydney suburb. Another person I obviously do not know.

Perhaps - just perhaps - the people who purchased an Mk12 and acquired software at "Optus engineering" were related to the people who have engineered the Aurora project with such obvious "skills." If they managed to screw up Aurora so badly, what possible chance would they have making an Mk12 function!

So someplace up there on the upper floors of Optus there are people reading reports that advise, "*Our engineering department has acquired and tested the piracy reader/writer device(s) and we find they do not work. It is our judgement that SatFACTS dwells on this subject just to sell more magazines; there is no threat to our security here.*"

OK - have it your way. I'd send Optus the Christmas card sent to me for evaluation but unfortunately I have already passed it on to a well known European for his analysis.

THE 1999 SATELLITE EXPLOSION IN THE PACIFIC/ASIA!

One down and four to go over the next 3 months.

InSat 2E ... Gorizont 33 ... ORION 3 ... AsiaSat 3!

Stay tuned with SatFACTS!

❑ **ENTER** my **12 MONTH** subscription to SatFACTS starting with February 15th issue (rates below)

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Company (if applicable) _____

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Town/city _____ _____ Country _____

Amount to send: 1 year - NZ$60(inside New Zealand) /A$90 (inside Australia) /US$60 (outside of NZ and Australia) or 3 years - NZ$140/ A$210/ US$150 if by cheque. **VISA** or **Mastercard**? See form below and return with order. Return to: **SatFACTS, PO Box 330, Mangonui, Far North, New Zealand** or if by VISA or Mastercard fax to 64-9-406-1083

ALL SatFACTS SUBSCRIPTIONS ARE SENT VIA AIRMAIL - WORLD-WIDE!

USE THIS FORM ONLY WHEN CHARGING ON VISA/MASTERCARD

Please charge my **VISA/Mastercard** as follows:

☐ ONE Year of SatFACTS MONTHLY (NZ$60, A$90, US$60)

☐ THREE Years of SatFACTS MONTHLY (NZ$140, A$210, US$150)

☐ SATELLITE TELEVISION: The Booklet (NZ$10, A$12, US$10)

☐ One Year of COOP'S TECHNOLOGY DIGEST (NZ$125, A$125, US$125)

Indicate charge card type: ☐ VISA ☐ Mastercard

Name (as it appears on **VISA / Mastercard**) _____

VISA/Mastercard Number __ __ __ __ - __ __ __ __ - __ __ __ __ - __ __ __ __

VISA/Mastercard expiration date _____

Instructions: If ordering by mail, return this complete (3-part) card or a copy of same (to **SatFACTS, PO Box 330, Mangonui, Far North, New Zealand**); if order by FAX, send full card as a single sheet to **64-9-406-1083**

SUPPLEMENTAL MATERIALS from SatFACTS MONTHLY: Order Form

☐ **SATELLITE TELEVISION:** The Booklet. Excellent introduction to home dish ownership for the layman, including major contributions from the father of geostationary satellites - famed science fiction writer *Arthur C. Clarke*. The perfect tool to help the satellite system seller explain home satellite TV to the layman consumer. From SPACE Pacific. NZ$10/ A$12 / US$10, airmail.

☐ **COOP's TECHNOLOGY DIGEST.** For the really serious enthusiast, investor, business person in satellite television and allied leading edge technologies. Ten issues each year, jam-packed with information you will not find anyplace else. "Coop" routinely culls more than 60 publications world-wide, terribly expensive newsletters, Internet and his hundreds of private contacts to keep you right at the leading edge of technology on the REAL changes underway in telecommunications. Conveniently issued near the **first of the month**, creating an excellent time-line-filler between the mid-month issues of SatFACTS. Now in the **6th year**, airmail world-wide. Normally NZ/A/US$250 per year - for SatFACTS subscribers special **50% discounted** price of NZ/A/US$125.

OBSERVER REPORTING FORM - Due February 5, 1999

• NEW programming sources seen since January 1st: _____

_____

• Changes (signal level, transponder, programming content) in pre-existing programming sources since January 1st: _____

_____

• OTHER (including changes in your receiving system): _____

_____

NOTE: Please use P1 - P5 code when describing signal levels and receiver IF/RF settings.

Your Name _____

Town/City _____ _____ _____

Make/size dish _____ LNB _____ Receiver _____

Your email address _____ if you have one!

MAIL TO: SatFACTS Monthly, PO Box 330, Mangonui, Far North, NZ or fax 64-9-406-1083

SPECIAL PAS-8 OBSERVER REPORTING FORM - Return WITH top portion!

Please note receiver frequencies (in C or Ku band, or L-band IF as your receiver indicates) for each signal reported. In summary, tell us how the various signals observed compare with BEST CASE reception through PAS-2 at your location.

PAS-8 C-band: Please list test signals or modulated signals observed by frequency.

/Vertical polarity - _____

Strongest seen on vertical? _____ Compares with PAS 2 as _____

/Horizontal polarity _____

Strongest seen on horizontal? _____ Compares with PAS 2 as _____

PAS-8 Ku-band: Please list test signals or modulated signals observed by frequency.

/Vertical polarity _____

Strongest seen on vertical? _____ Compare with PAS 2 as _____

/Horizontal polarity _____

Strongest seen on horizontal? _____ Compares with PAS 2 as _____

Comments - _____

SOUTH PACIFIC REGION Satellite & Cable Show '99

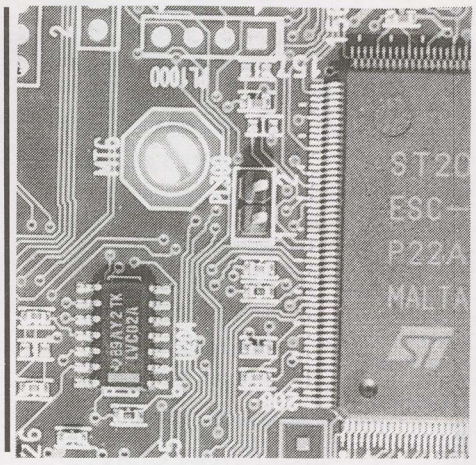
❑ YES - Send SPRSCS '99 Registration data
❑ YES - Send SPACE membership data
❑ YES - Send SPACE/Mark Long Certification courses data

NAME _____

Company (if applicable) _____

Mailing address _____

Town/city _____ _____ _____



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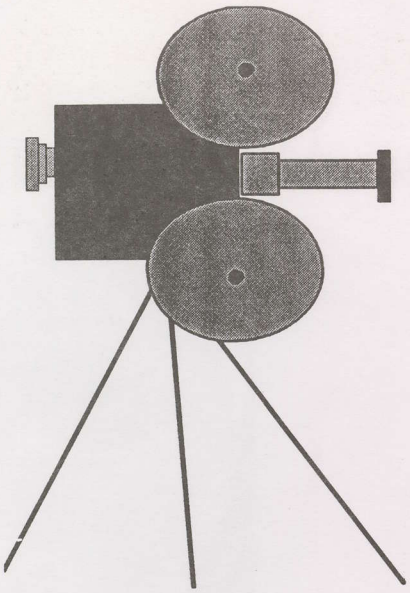
New Zealand
Fax 64-9-406-1083



sHOWTIME 99

TIME IS RUNNING OUT!

SOUTH PACIFIC REGION SATELLITE & CABLE SHOW (SPRSCS) '99

3rd CHANCE TO SIGN UP / ATTEND!

SPRSCS '99

March 23 and 24: Mark Long's SPACE Pacific Digital Satellite TV Course
If your work requires that you understand digital satellite TV, THIS is the course for you! Two days of intensive schooling, extensive course materials, one-on-one with Mark Long.

March 25 and 26: SPACE's Satellite and Cable TV Production Time!.
SPACE Pacific has secured satellite TV transmission time to educate and inform our industry members of the changes taking place in our high-tech world. Help us produce TV programme segments in 2 intensive tape to satellite production days!

March 26 and 27: Mark Long's SPACE Pacific Satellite Technician Course
The advanced course for technically inclined students who are after a broad understanding of all aspects of satellite technology (including, of course, digital). Two days, extensive course materials and one-on-one by Mark Long.

March 23 - 27

IF YOU HAVE NOT BEEN TAUGHT BY MARK LONG - YOU HAVE NOT BEEN TAUGHT!

FULL show details ...

... are available in brochure form. The dates are March 23-24 and 26-27 for the twin Mark Long/SPACE tutored courses. And March 25-26 for the trade show. Complete brochure request card on page 34 or contact us at (tel) 64-9-406-0651 or (fax) 64-9-406-1083.

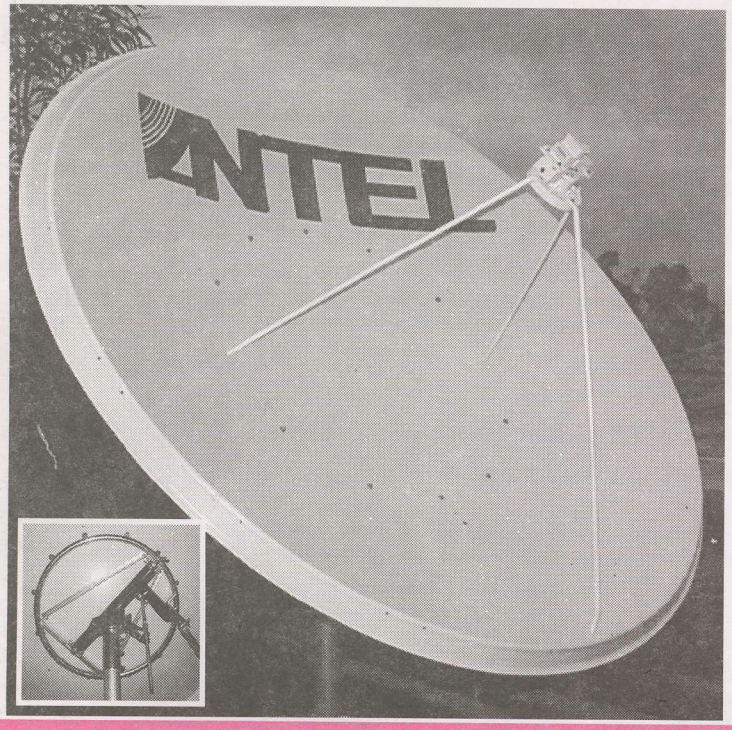
ANTEL

Precision Spun Aluminium Dishes

Antel 2.3

Single piece spun aluminium dish.

Total Diameter	**2.4m**
Reflector Diameter	**2.3m**
Pole size	**102mm**
F/D ratio:	**0.4**
Focal Distance	**930mm**
Gain: (>60% efficiency)	
4GHz	**37.7dBi**
12GHz	**47.2dBi**
Beamwidth 12GHz	**0.53°**
Maximum Wind Speed	
Operational	**120kph**
Survival	**160kph**
Finish:	
Dish	**Epoxy-Polyester Powder Coated**
Mount	**zinc plated**
Weight	
Polar mount	**44kg**
Reflector	**33kg**
Two mount options:	**Fixed & Polar**



Antel 1.8

Single piece spun aluminium dish

Total Diameter	**1.9m**
Reflector Diameter	**1.8m**
Pole size	**89mm**
F/D ratio:	**0.41**
Focal Distance	**740mm**
Gain: (>60% efficiency)	
12GHz	**45.5dBi**
Beamwidth 12GHz	**1°**
Maximum Wind Speed	
Operational	**140kph**
Finish:	
Dish	**Epoxy-Polyester Powder Coated**
Two mount options:	**Luxury Mount (fixed)** Spun aluminium ring, stainless steel elevation rod, fully galvanised pole cap. **Standard Mount (fixed)** Zinc plated ring, elevation rod and pole cap.

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