14-09-01 10AM

Bob Cooper's

SEPTEMBER 15 2001

SatFACTS

MONTHLY

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

IN THIS ISSUE

25 Foot Dishes in the Tropics

SDS Translator Tests - microwatts work!

Onward to Melbourne and our future?

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

Vol. 8 ◆ No. 85
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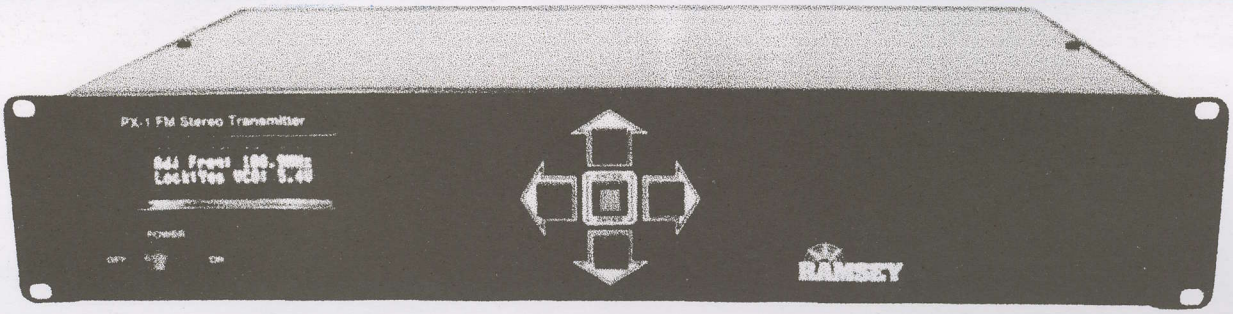

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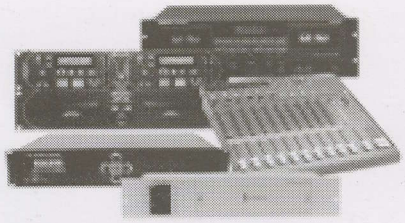

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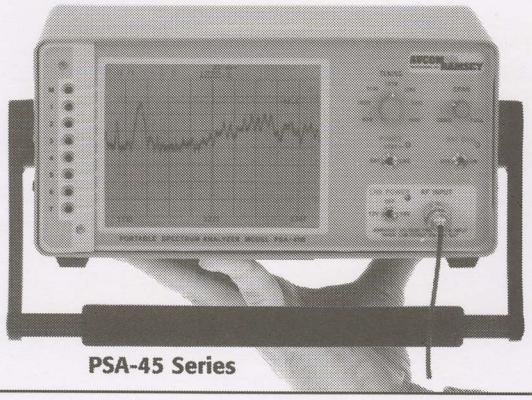

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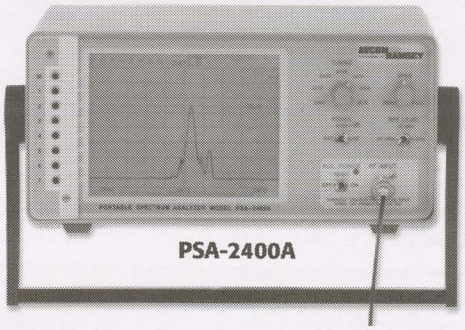

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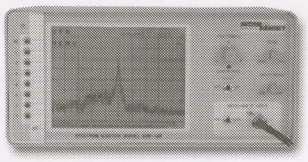

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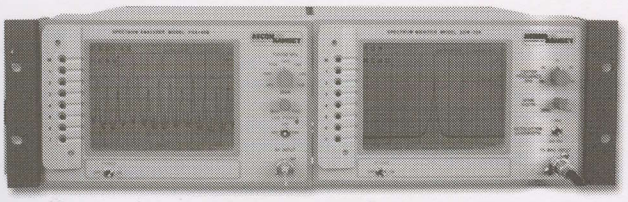

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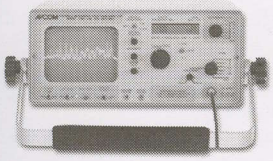

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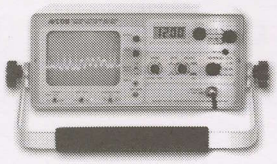

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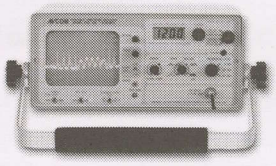

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the SPRSCS 2001 schedule - revised September 15th

Thursday September 27:

General Sessions: (10AM) "Preview of show technology"; (11AM) "Digital signal metering technology" (Patrick Lagerstedt, Skinka Electronics, UK); 1.30PM - Note - Thursday afternoon General Sessions will be announced in Melbourne Show Schedule.

Work Shop: (10.00AM to 4PM) "Terrestrial Digital - how it works, why it does not work, how to fix it" (multiple sessions including side-by-side set-top box comparisons led by Leon Senior, Strong Aust. including Russell Futter and Anand Govender of UEC Pty Ltd.)

Exhibits open: 3PM to 6PM - exhibitors have Exhibit Hall (Red-Line) Passes, **everyone welcome**!

Friday September 28:

General Sessions: (**10AM**) "*Design challenges in multi-storey analogue + digital distribution systems*" (Eric Fien, Broadnet International); (**11AM**) "*DiSEqC switching techniques*" (Scott Nesbitt, Sciteq Pty Ltd and Garry Cratt, Avcomm Pty Ltd); (**1.30PM**) "*SDS Overview - this is how it works*" (John Ramsey, Avcom-Ramsey Technologies, New York); (**2.30PM**) "*DVB-T Overview - practical solutions*" (Michele Gazzola, Fracarro Electronics, Italy); (**3.15PM**) "*Open Forum - DVB-T side by side set-top testing*" (Garry Cratt, Avcomm Pty Ltd.)

Work Shop: (**10AM-12N** & **1.30PM to 4PM**) "*Shared Dish Systems/SDS - everything you need to know*" covering low and high power transmitters, transmit and receive antennas, propagation paths, masthead amplifiers, CA and FTA service parameters, modulator and translator formats (John Ramsey, Avcom-Ramsey Technologies, New York).

Exhibits open: 3PM to 6PM - exhibitors have Exhibit Hall (Red-Line) Passes; **everyone welcome**!

Saturday September 29:

Work Shop: (**9.30AM-4PM**) "*Low power community FM broadcasting - a cram course*" covering all aspects of creating and operating a 100 milliwatt - 1 watt - 100 watt community FM station. Including transmitters, satellite programme audio sources, transmit antennas. **Special**: Optional kit construction of 100 milliwatt and 1 watt FM transmitters from Ramsey Electronics kits during course; kit builders had to be registered no later than September 7. **Note**: This full day session also open to all Thursday and/or Friday session attendees with appropriate admittance badges (John Ramsey, Avcom-Ramsey Technologies Inc., New York).

Work Shop: (**10AM to 3PM**) "*Eric Fien's hands-on treatment of DVB-T distribution systems*" covering all aspects of wiring homes, offices, motel/hotels for companion digital terrestrial and analogue. **Note**: Registration for this session ended September 1 - no attendees to be accepted past that date.

Exhibits open: 10AM to 3PM - exhibitors have Exhibit Hall (Red-Line) passes; **everyone welcome!**

THERE IS ONLY ONE WAY TO ATTEND - NOW:

Late-late-late (as in tardy and not having a written excuse from your Mum) would-be registrants have **one last chance** to get into sessions (*).

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(61-0)3 9783 2388 or

fax to (61 0)3 9783 5767 or

e-mail placey@netlink.com.au and have your Visa or Mastercard handy.

* - Exhibit halls are open to anyone without pre-registration. Merely show up at Box Hill Institute / TAFE - Main building Nelson Campus - at corner of Nelson Road and Maroondah Highway / Whitehorse Road and go in through Gate 13. Exhibit Halls open Thursday September 27 and Friday September 28 3PM to 6PM; Saturday September 29 from 10AM to 3PM.

Schedule updates - as required - will appear in Melbourne released Conference Guide.

SatFACTS
MONTHLY

ISSN 1174-0779

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 are entering 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

September 15, 2001

This marks the start of SatFACT's 8th publishing year. When I was talked into creating SatFACTS by Garry Cratt, I told wife Gay, "*This will be fun. It will give me something to do.*" Silly me.

CTD is a year the elder. I like CTD a great deal although recently the format change has been necessitated by too few hours and too much to do in the hours available. The current Coop's Technology Digest is more "reproduction" than original material from me.

This issue of SF almost did not happen. Normally I reserve the 28th of the month to the 8th of the following month to create the next issue of SF. I was tardy this month, knowing the material in hand would be easily worked into an issue from perhaps the 4th on. John Ramsey was working to complete his first translator SDS testing (see page 6) and it was important to me that we had those initial results. That was when lightening struck.

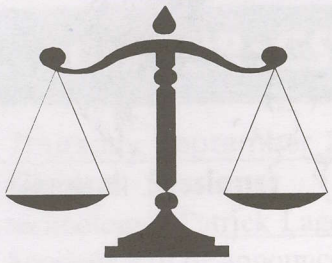
Peter Lacey wrote me on the 5th, "*Well - I suppose now we will have to read all about what happens when lightening strikes?*" Pages 20-21 and 32 prove his guess correct. Lightening struck ground in one of our cable communities at 8.21AM September 4th. Literally, all hell broke loose. The four or five days of intense SF creation disappeared in a blur of replacing lightening damaged cable system parts. This is now the 9th and in truth, this was almost "*the issue of SatFACTS that did not happen.*"

Something else almost did not happen. Or may not yet happen. SDS demonstrations in Melbourne. Someone - an Australian radio amateur I suspect - read through and between the lines of the last few issues of SatFACTS and assumed we were planning a wild no license, no permission RF radiation free-for-all during SPRSCS 2001 in Melbourne. They assumed we were planning to radiate wideband FM signals without regard to local law or local users between 950 and 1450 MHz. And they alerted the ACA to this "invasion" from New Zealand and the USA.

Our SDS demonstration during the SDS Work Shop session September 28th has always been planned as follows: (1) 20 milliwatts, not the high power 10 watts; (2) on 1270 MHz which happens to be within an amateur radio assigned band of frequencies; (3) with the transmissions operated by an Australian amateur (ham) operator licensed for this frequency range as well as this (very tiny) power level and this modulation format; (4) transmitting nothing more exotic than the actual session being held on SDS. In other words, a work shop which describes (during the transmission period) use of SDS equipment within the Australian 23cm band. There is more. No one who resides in Australia will be allowed to purchase SDS equipment unless they can prove their licensed amateur status. I should note that this is far stricter than current Australian amateur regulations - a person can walk into a store selling high frequency and VHF amateur equipment and without proving their amateur status purchase anything they wish. Those who live outside of Australia (we have attendees registered from Egypt, Sweden, Hong Kong - a veritable "UN" of enthusiasts) will be allowed to purchase SDS equipment and take it away with them without respect to amateur or other license status - but the SDS transmitters will require some "final assembly" after they arrive home. In other words, they won't work as advertised until the buyer gets out a soldering iron and connects some parts up. And, this is far stricter than Australian rules as I understand them - 27 MHz and CB unlicensed operators able to purchase ham gear that is completely functional without proving they have any kind of license even in Australia. This has always been our plan - hey - I've been a licensed ham myself for 48 years!

-ON THE COVER-

John Ramsey, founder of Ramsey Electronics in New York state - USA - conducting translator tests in 950 - 1450 MHz region. Upper two antennas - radiating vertical and horizontal SDS-FM. Lower offset dish antenna - receiving USA's DirecTV for translation (p. 6).



LETTERS

OLD and NEW

On November 24, 1996 reader Bill Hyman, a resident of Pago Pago, American Samoa sent us an article entitled "Inclined Orbit Tracking." We never published it and regret that. , as his cover letter reported,

"I was bitten by the TVRO bug many years ago. I have not made any money out of it but it has been a gas. In those days none of the satellites were inclined orbit and I enjoyed watching TVRO programs more than I do now. Although I have never seen a live Aussie Rules football game, I became an ardent fan. Unfortunately I cannot see them (here) anymore."

In fact, virtually all of his reception is now gone - a victim of digital transition and ever changing footprint priorities by the satellite operators. But - a new PAS-5 footprint from 155W may brighten his day (see report, right) if PanAmSat can figure out some use for the newly available satellite. In the interim, read a portion of his more recent story on p. 10 here. In his world, a 7m antenna is a "small one!"

Is this hacking?

"I know you do not publish information that will help inquisitive people (hackers) decipher what might be going on inside their CA style IRDs. But I also read of your distaste for Scientific Atlanta products and thought you might be willing to help with the following:

I have three PowerVu D9234 IRDs. They all have inside a chip called U33. The numbers imprinted on these differs for each receiver suggesting to me it has a unique-address function built in. For example - '185 310-52 1993 appears as headers on all three. But then the next line is different on all chips. For example (and I am mixing up the actual number by taking some elements from each of the three receivers) ID41JZRQEAA1111 (where the '1111' number changes on each chip but in my case always starts with a 9). Is there anyone out there who can educate me about the source and purpose of this device?"

steviewonder@cwcom.net

Is hacking (busting) PowerVu the same as breaking NDS or Irdeto? There are those who would suggest anything done with SA equipment is fair game as pay back time for the grief they inflict on so many honest, money paying, customers.

Sky's losses

"(The) New Zealand Business Herald for September 7 reported Sky NZ admits to a loss of NZ$42.3 million for the fiscal year ending June 30. It also said they have lost more and more money each year since starting digital satellite. What do they know about operating a business that I don't know?"

RS, Taranaki, NZ

How to keep their public stock price up despite losses. Same report said subsidy of digital IRD installations has ended and that will be interesting to follow.

PROGRAMMER PROGRAMMING PROMOTION UPDATE

SEPTEMBER 15, 2001

Will the real Rohinton Anklesaria please stand up? Our report on arrest and conviction of NSW man for alleged distribution of piracy (including satellite smart card) products (SF August, p. 32) drew protest from another individual who claims his photo was misappropriated in our news story. Giorgio Bissoli writes, "*Since your article on Rohinton Anklesaria* ('Secret Life of a Pirate' by the Sydney Daily Telegraph), I *have been receiving nuisance telephone calls, abusive and threatening e-mails as well as comments seen on both satellite news groups and the* cdcopyworld *web page. I have been forced to cancel my own web page, and have requested a new telephone number from my provider. This has been a most unfortunate incident and I request your immediate assistance in putting the situation right*." Incident? Seems two copies of Sydney Daily Telegraph article we cited as source for report had been 'tampered with' prior to being sent to us. A very clever (or very naughty) individual had gone to trouble of electronically stripping out the face of the convicted individual (one Rohinton Anklersaria) in a Daily Telegraph published photo replacing Rohinton's face with the head of another man (Giorgio Bissoli). And Bissoli wants his face disassociated from the body of Rohinton! Both men are apparently not only well known but have been highly visible (in past) in DTH product selling area. Is this a case of the kettle calling the pot black?

We think - real Rohinton (right) and substituted head of Giorgio (left).

PanAmSat PAS-5, moved to 155W from above Atlantic region, is scheduled to begin 2nd-life operation 15 September. Satellite has three+ years remaining of station keeping fuel and although original downlink coverage beams were designed for Americas, C-band forecast reaches +41 dBw (1.2m C-band dish for 3 dB above threshold signal levels) over Papeete (Tahiti). However, levels drop to under 29 dBw as quickly as east coast of Australia. Immediate benefits? Maybe none. Stay tuned.

ATVI. Minor pre-operational additional details leaking out of ABC Australia. Programming will include several hours per day of made-for-ATVI audience including target-specific newscasts (such as Southeast Asia). Biggest important unanswered question is "*which satellite, which coverage beam.*" One rumour - and everything we have heard is rumour as far as we are concerned - says PAS-8 Horizontal. That makes some sense as PAS-8 coverage on H side would certainly reach the Pacific region (which Palapa C2's old ATVI did not). On the other hand - on September 8th ABC NewsRadio and ABC Triple J were again operating on C2's 3976H (Sr 2061, FEC 1/2) in clear MPEG-2 - after being gone from C2 for more than a month. What would they be doing (back) on C2 - as a part of the ABC package - if ATVI was heading for PAS-8? It won't be over until it is over.

Spectrum analyser? (Analogue) TVRO receiver? Two new offers this month of under A$800 price item which we suspect will be major hit at SPRSCS 2001.

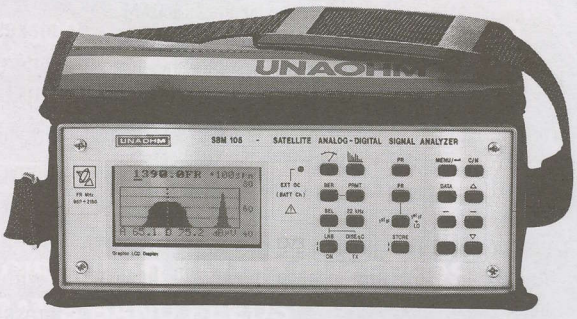
The growing Unaohm Television Analyser family

EP507 permits excellence in measurement across a wide range of television functions. Dual colour coded frequency markers provide a sound method of Digital Channel Power measurement. Automatic measure functions include Carrier to Noise and Video to Audio Ratios plus expanded Data Logging. Improved resolution bandwidth displays extra Spectrum detail. QPSK, OFDM and QAM quality measures of Bit Error Rate and Modulation Error Ratio etc., colour Constellation Diagram and printout of MPEG Network Information Tables are available. An internal reference Noise Generator that permits measurement of insertion loss or filter alignment etc. anywhere between 45 and 2000MHz is also available. A quality TFT LCD screen uses colour to clarify the meaning of most measurements, or simply to show a colour TV picture.

EP 319 level and Spectrum measurements feature high accuracy and selectable Resolution Bandwidths of 100kHz, 1.5MHz and 4MHz to provide real time spectrum displays of signals from TV stereo audio and colour sub-carriers to SCPC satellite signals. 5-40MHz is included, with Analogue and Digital data logging. Options include Digital Signal Quality measures of QPSK+QAM or OFDM. Operational running time is extended thanks to a Ni MH battery pack. Dual Spectrum Markers with Frequency and Level difference (Delta) measures, an electronically generated graticule, On Screen Display function indicator, automatic analogue Carrier to Noise and Vision to Audio ratio measures, DiSEqC 2.0 switching, Teletext etc. are included.

EP-313 provides a new benchmark for price, function and quality in a Television Analyser. Spectrum mode uses an easy to see frequency marker. Carrier to Noise ratio, Vision to Audio ratio and Digital Channel Power measurements display digitally and are automatic. 100 PReset tuning positions store your favourite channels, whilst factory preset channel plans enable tuning by CHannel almost anywhere, by FRequency either by direct entry or step. Teletext is standard. Factory Digital Signal Quality options for QPSK, OFDM or QAM round out the EP-313's measurement abilities.

SBM-105 makes all the necessary measurements for Digital and Analogue Satellite signal Quality. Built around the standard Unaohm Digital Signal Quality measures, the SBM-105 includes Spectrum with Analaogue and Digital signal level measurement. The graphic matrix LCD is readable in direct sunlight or low light. Versions are available for QPSK, QAM and OFDM. The SBM-105 is a low cost answer to installer measurement requirements of digital from a company with over 60 years experience manufacturing electronic instruments.



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Clarify 16 QAM?

"I have been reading many comments on various news groups about something called 16 QAM. I understand from a brief mention in SF that some of the Australian networks are now using this 16 QAM thing to transport USA network programming full-time from California to Australia. And that it is not conditional access. Can you explain 16 QAM and how somebody will tune it in?"

VJ Parish, Sydney

Take a deep breath. Just when you thought you understood enough about MPEG-2 to be able to follow the game, along comes yet another digital format. 16 QAM is to MPEG-2 what HDTV is to terrestrial TV. Since all digital data streams are basically nothing more than complex, fast-moving and fast-changing mathematical algorithms, there are probably as many ways to manipulate the data stream as there are guys and gals developing software. 16 QAM has the following characteristics: (1) It is capable of transmitting more material in less bandwidth, (2) it is totally incompatible with MPEG-2 (which simply means you would have to acquire a 16 QAM receiver), (3) It can support multiple camera views of the same event so that rather than a sporting event producer in New York deciding which shot to 'take' for broadcast, all of the camera shots can be multiplexed to Sydney where the 7, 9 or 10 producer makes his own decision, (4) the transmission can switch from low or medium data rate SDTV to high data rate HDTV seamlessly (something MPEG-2 cannot do). So far so good. Now the reality. 16 QAM only works when there are much higher carrier to noise ratios than with MPEG-2. "Threshold" with MPEG-2 is someplace around 5-6 dB C/NR. That's good for us because as long as the received signal stays above threshold, we've got non-pixelating picture and sound. But 16 QAM wants a C/NR of at least 16 dB and depending upon the traffic load, up to 22 dB C/NR. So if your 1.2m dish worked on a MPEG-2 circuit with a 6 dB C/NR - you would need to increase the dish size to no less than 3.4m (C-band) to access 16-QAM at the same transmitted power level as the reference MPEG-2 service. Or 7.2m if the 16 QAM is "dense." So on Intelsat I701, 3749RHC, Sr 26.400 the USA sends full-time network service to Australia (and anywhere else in the Pacific on this beam) in 16 QAM. No, it is not CA (encrypted). But - those clever guys have also backed the carrier level power down so that it takes a dish in the 13m range (and up) to access this signal with even a 16 dB C/NR. Why did they do that? Because it added one more element to ensure guys like you with backyard dishes don't get into the circuit. Of course you'd have to locate a 16 QAM receiver for starters and the few that are available (including from SA) begin at around A$5,000 and go up. Fast. Half-time score? Commercial guys 100, private guys zero. The first person to work this one out so a 3m or so dish will work with this feed gets our "Home system designer of the year" award!

TVNZ status?

"OK - so TVNZ got stung by TelstraSaturn (SF August, p. 15). Any chance they will bounce back?"

T. Arnold, Wellington

Hope springs eternal but Government owns TVNZ and that is not very hopeful.

HARDWARE EQUIPMENT PARTS UPDATE

SEPTEMBER 15, 2001

STAR Asia Movies in Melbourne. STAR TV has granted STRONG Aust permission to receive and display their Asian "Star Movies" channel during SPRSCS 2001 in Melbourne. The choice of Star Movies for show display, according to STRONG's Leon Senior, "*is a verification of the support we are finding for the SDS technology concept from major programme package suppliers in this region of the world.*" STRONG also is designing and installing a ten channel SDS system, for an island in the Central Pacific, which will have a potential subscriber base of 3,500 homes. STRONG Aust has been appointed 'Primary Distributor' for Shared Dish Systems (SDS) in the Pacific region.

SDS detail. Our report on "Translator SDS" (p. 6) doesn't tell the complete story. With a minuscule 100 microwatts (0.001 watt) transmitter power, 1 km + coverage using DirecTV (DSS) digital transponders as a signal source. But when the power was raised to 10 watts - wow! That's enough power to go away from LOS and point the receive antenna at a reflecting object (such as a multi-storey building, large road signs) so the SDS receiver gets signal via a non-direct route. This suggests purpose-built passive reflectors on a hill top with LOS from the reflector to the SDS transmitter could be used as a "bounce" for homes well out of LOS in a valley below. The fun is just starting.

Patent applications filed in New Zealand during August for SDS cover range of claims including unique use of wideband FM circuits for delivery of point to multipoint television and data material in both analogue and digital formats." New Zealand's "Ministry of Economic Development" has initiated study project searching for possible frequency bands above 500 MHz where SDS could be employed on an exclusive or shared basis. Emphasis is on using SDS to deliver material from public and private schools over relatively short ranges to students and others unable for whatever reason to attend normal school sessions and activities.

Group calling itself Digisatnz Limited and claiming to be in Palmerston North (NZ) has revealed a new digital IRD scheduled for availability November-December which could be real attention grabber. Model DVB-DS9i has embedded VideoGuard + Open TV + (and this is the interesting part) "One Irdeto-Access V2 CI cam." Which means? It would handle both Sky NZ's pay TV service (NDS VideoGuard protected) as well as most of the Irdeto format services. But as Foxtel-Austar-Optus on B3 Hz are only visible (receivable) in Australia and Sky NZ on B1 Vt is only strong enough to be received in New Zealand - where would you use a NDS + Irdeto receiver? Fine print on web site (http://www.digisatnz.tv/dvb-ds9i.htm) also says, "One CI slot for Irdeto, ViAccess, Conax, CryptoWorks, Nagravision and MediaGuard CAMs." Now that makes it more interesting - and many Asian locations as well as northern Australia where Asian signals sneak in would find this interesting. Big deal here is inclusion of NDS (Murdoch's) "embedded VideoGuard" which to best of our knowledge has never previously been available (or licensed to) non-Murdoch service IRD builders (such as Sony, Pace et al for UK's BSkyB or Pace and Zenith for NZ's Sky Network TV). Other features: Automatic NTSC/PAL, full DiSEqC and voltage switching, SCPC-MCPC C or Ku, twin SCART sockets, and get this - onboard 56kb modem and "wireless Internet keyboard." Priced originally when web posted at NZ$795, at presstime it has risen to NZ$848 (excluding shipping and NZ GST) which translates to A$709 or US$368. Why would Murdoch's NDS guys authorise the marriage of their unique NDS Videoguard to competitor's Irdeto format? May be a mistake at management level or perhaps rumour of Australian Foxtel changing to NDS is true!

Field Tests Show SDS Translators Work - but ...

A quick review. There are two totally separate approaches to SDS - shared dish systems. In SF #83 and 84, July and August, we reported on how first 20 milliwatts and then 10 watt SDS performed in the real world. This focused on remodulated SDS - you use a standard DTH/TVRO receiver (analogue or digital - it matters not which) to create baseband video and audio to modulate an L-band transmitter. There is another totally different approach.

Rather than using one (or more) DTH/TVRO receivers to receive (demodulate) the satellite signal(s), you use the output of the LNB - at L-band - to create the standard 950 - 1450 MHz band of signals. Within 950 - 1450, there may be only digital signals (such as PAS-2) or some mixture of analogue + digital (As2, As3).

Basically, the LNB receives C-band (3700-4200) or Ku band (12.250 - 12.750), and down converts that range to L-band in the LNB. Now we have the standard 950 -1450 MHz (L-band). Which in the SDS version to be discussed here stays at 950 - 1450 - for retransmission.

950 - 1450 in this system is "filtered" (to eliminate any spurious signals that fall outside of the 950 - 1450 range), amplified in a stage known as a "buffer", then amplified again to a suitable level for retransmission.

The advantages to this approach are as follows:

1) The normal (SDS) L-band receiver used at a receiving location functions just as if it was actually connected by wire to the satellite dish.

For example, a NDS or Irdeto format CA signal, received from satellite, goes through the SDS system unchanged. That means any location that is able to receive the "translated" SDS service signal will decode or decipher the original format signal exactly as they would if "hard wired" to the dish system. If you were on an island in the Pacific, say Solomon Island(s), and took the 950 - 1450 MHz output from a vertical polarity AsiaSat 3 feed, a SDS "wireless" connected receiver would find the Zee Bouquet (3700), ETV Bangla (3749), Arirang TV (3755) and so on up through and including Zee Bouquet #2 (4135 MHz). In the middle range, Star TV at 3780 1370, 3860/1290, and 3940/1210. If you were in India where the Star Bouquets are legally usable, a dish up to perhaps 10 km distant could serve your location with you using a standard Star capable (NDS CA) receiver. Only - your receiver is connected to a L-band SDS receive antenna, not a dish.

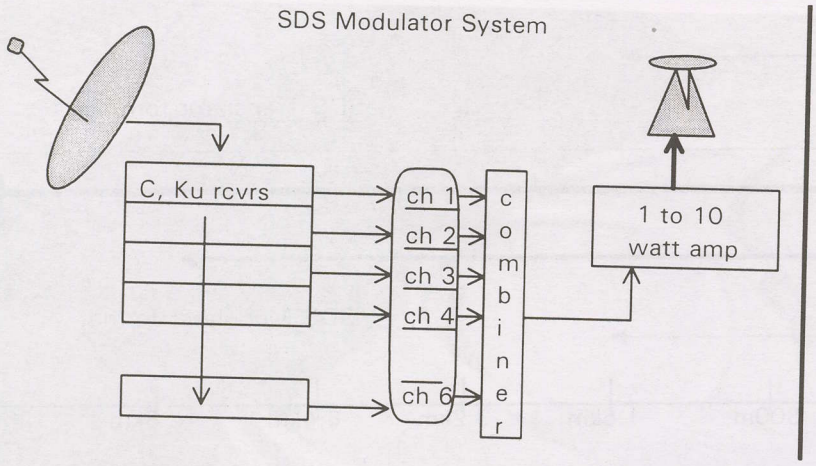
In our original SDS-conceptual report (SF#74, p. 1) we suggested the most efficient method of handling both the vertical polarised 500 MHz and the horizontally polarised 500 MHz was to rebroadcast one set in the frequency range 950 - 1450 MHz and the second in the L-band extended frequency range of 1650 - 2150 MHz. However, system creator John Ramsey thought otherwise. And we are glad he did. John believed that if satellites could share (V and H) the same frequency range (3700-4200 C-band, 12.25 - 12.75 Ku), perhaps terrestrial rebroadcast of the converted L-band ranges could "share" as well.

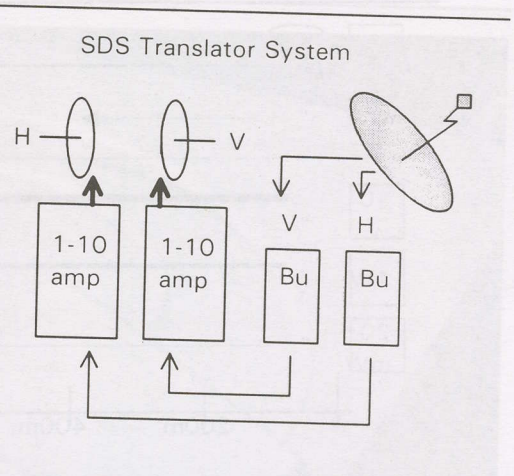
Taking C-band as an example - AsiaSat 2, 3, PanAmSat 2 and 8 (for example) use the same downlink frequency ranges twice. One for vertical polarity and again for horizontal polarity. Our feed (plus connected LNBs) separate the vertical

TOP to bottom. This could be a complete SDS satellite "relay" station installation. DirecTV (USA) dish on bottom receives 8+ transponders containing more than 200 digital programme channels; middle curved-flector is horizontal polarity while top is vertical polarity retransmission. An "earthly-relay" for a space-originated service.

STRONG Aust appointed Pacific Region Master Distributor

SDS Master Sales has appointed STRONG Aust as the region-wide distributor for all SDS products to be used in the Pacific Ocean area. STRONG will display the SDS line at SPRSCS 2001 in Melbourne September 27-28-29, stock the full line of equipment, appoint Regional Distributors and Installing Dealers, and, provide system planning support and technical expertise for both modulator and translator versions of the Shared Dish System technology.





THERE are two distinctly different design approaches to SDS technology. In the July and August SatFACTS, we reported on the "SDS Modulator" approach. Individual channels of video and audio remodulated on L-band channels for reception by standard (analogue) L-band receivers. In this month's report, the SDS Translator System which takes one or more transponders of analogue or digital transmission, processes that spectrum, and rebroadcasts it to analogue or digital L-band receivers. Translators do not demodulate the satellite signals - leaving intact any CA or other conditions just as they are transmitted by the satellite.

and horizontal simply because our wideband FM modulation format discriminates between signals even if they are only a few dB apart in (signal) level. In a typical satellite link, the vertical and the horizontal signals are in excess of 15 dB - often as much as 25 dB apart.

Ramsey theorised that if he could create transmitting and receiving antenna systems that afforded a minimum of 15 dB separation he could transmit one 500 MHz segment in vertical and the other in horizontal just as if you were switching at the satellite dish itself.

It works!

As best we can research, nobody has ever done this previously: (1) wideband FM at L-band, (2) complete frequency sharing between V and H signals, (3) transmitting using two separate L-band transmit antennas, (4) receiving using either two separate L-band antennas or one antenna that physically rotates (twists or turns) from V to H.

To prove the system, Ramsey tied into the complex 200 TV channel + package transmitted over the USA by DirectTV. They use RHC and LHC in the Ku band region and their service is similar to Foxtel, Austar or Sky NZ in the Pacific. Only far more channels and they are using 8+ large transponder bandwidths simultaneously.

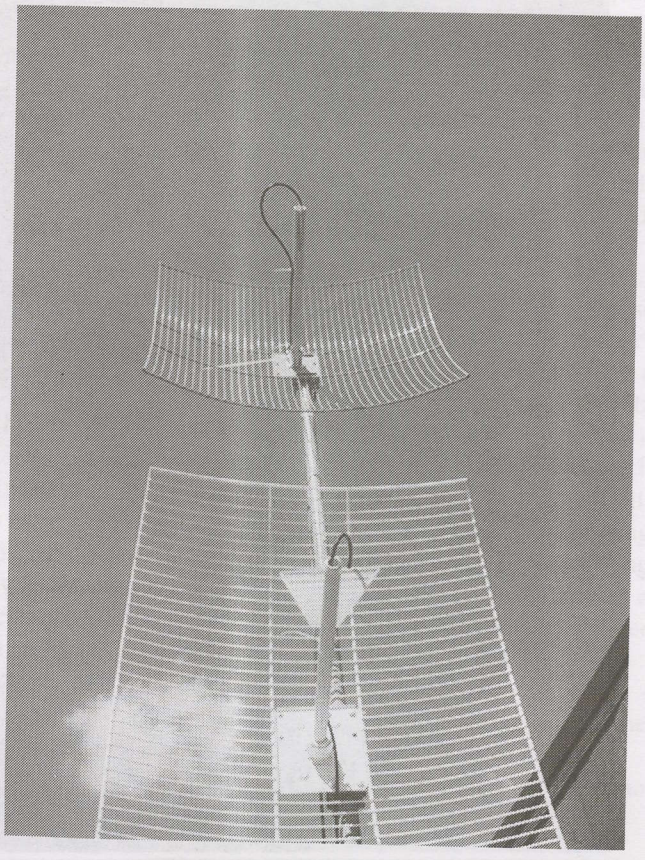
A single 80cm DirecTV dish receives the RHC and LHC signals simultaneously. Normal home systems switch between RHC and LHC - Ramsey had to power both LNBs - feeds simultaneously because he wanted not switchable reception but full time V and H reception for SDS rebroadcast purposes.

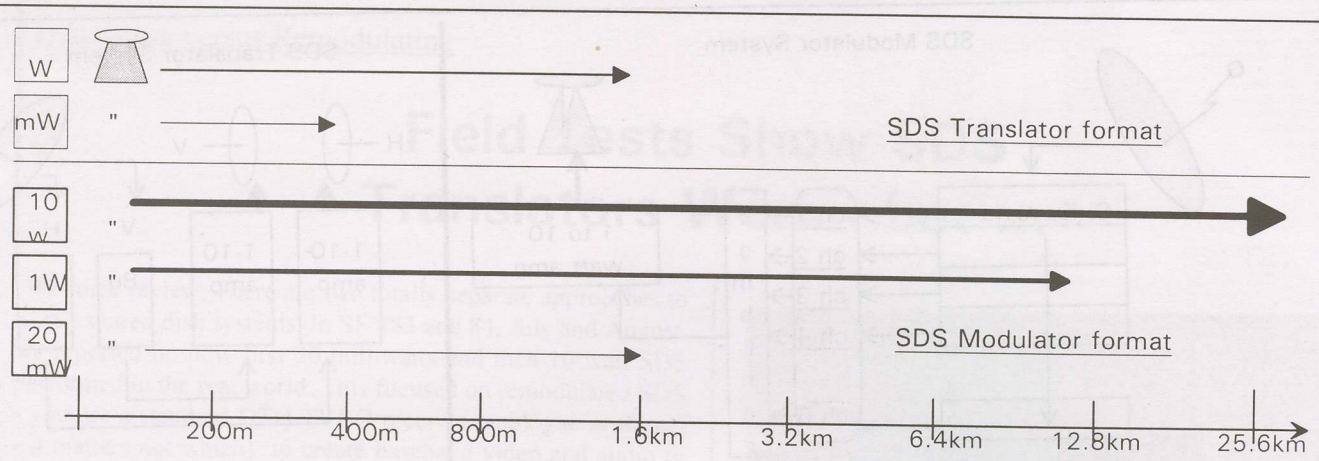
We don't wish to confuse you here. Think of this as being in Australia and receiving Optus B3's pay-TV packages (Foxtel-Austar-Optus) on the H side and simultaneously the Optus Aurora on the V side. Both are processed by separate full-time LNBs and then filtered. We have the same 950 - 1450 L-band region, twice or two times - once for each polarity. Now the individual 950 -1450 polarity segments are buffer-amplified and then "final-amplified."

At this point we have two totally independent, separate, blocks of 950 - 1450. One originated on one of the original satellite polarities, the second on the opposite polarity. Now we want to get them from the "final amplifier" to multiple receiving points - perhaps as far as 20km distant.

So we run a cable from the "V" polarity amplifier to a V-polarity transmit antenna and a duplicate system for a H polarity transmit antenna (below). At this point there are two unrelated, separate polarity services sharing the 950 - 1450 L-band bandwidth. And they are "in the air" ready to be

TWO mesh corner reflector transmit antennas as used for rebroadcast of DirecTV's two polarity service. Note bottom antenna has horizontally polarised logi antenna for feed, top is vertical.





DIGITAL/Translator versus analogue/modulator and distances covered (read bottom line)

received by a suitable L-band reception antenna (below) connecting to a suitable L-band receiver (because we were testing with DirecTV, the receiver shown below is for that service; substitute a Foxtel or Austar receiver in your mind for use in Australia, or a Sky Network NZ receiver for NZ).

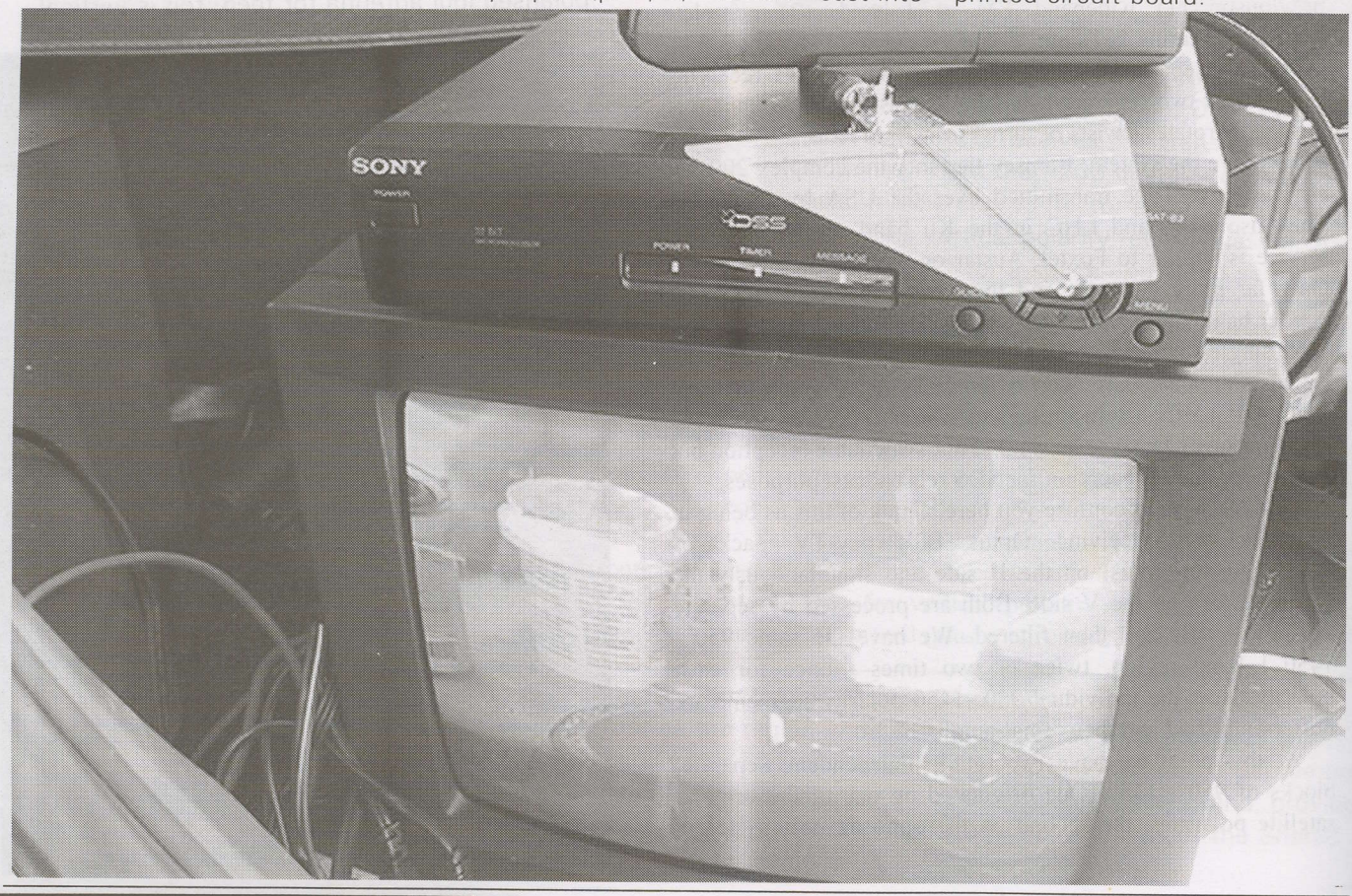
It does not get much simpler than this! One dish, located where it can receive the satellite in question, rebroadcasting the entire satellite output (on both polarities), or, using only one polarity for a single service (such as in NZ for Sky Network only). Or, perhaps it comes from two satellites - say you rebroadcast the H(orizontal) side of Optus B3's pay channels on H and then the H (orizontal) side of AsiaSat 2 as a vertical signal. That would combine Austar-Foxtel-Optus with the European Bouquet (As2) along with a sizeable variety of Chinese and other services (such as WorldNet) from AsiaSat.

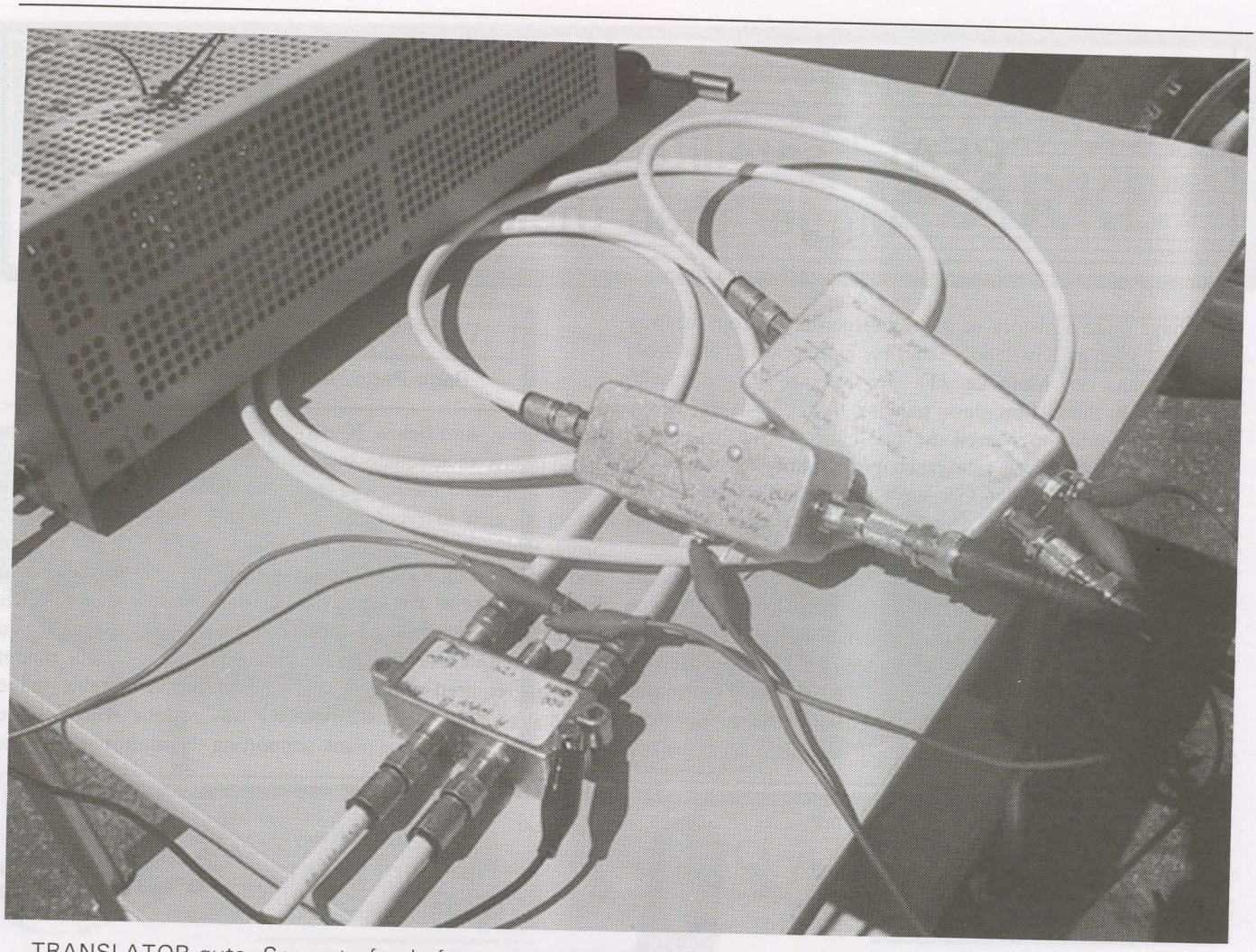
The tests

In the redmodulating SDS format, one channel at a time, we found 20 milliwatts did a nice job out to several kilometres even when using low gain (3 dB) transmit antenna(s) and an almost as low gain (6 dB) receive antenna.

SDS-translator creates a new kind of power sharing situation. In SDS-remodulate, the total power of the single TV channel is available for that single channel. But when you down convert 3700-42100 (or 12.250 - 12.750) to 950-1450, and then rebroadcast the entire 500 MHz, the amount of transmitting power available for a single transponder (such as the European Bouquet) is what is left after sharing with all other signals in the L-band 950 - 1450 MHz range. In the DirecTV USA tests, this meant the amount of power for a single transponder was in the region of 100 microwatts. That is

AFTER translator rebroadcasting, this is how it works. Notice the logi antenna (right hand front edge of Sony IRD) has matured from July report (p. 7, 9) - is now "cast into" printed circuit board!





TRANSLATOR guts. Separate feeds from each of the DirecTV polarities are processed as if they were the only signals present, and each connects to its own correctly polarised transmit antenna (p. 7).

not watts - not milliwatts (hundredths of a watt). That is 0.001 watt. How much is that? About as much as you would have with a 3-cell torch or a TV set's IR remote! Of course if a "ten watt" amplifier is added after the buffer amplifier used in our SF tests, the power goes up dramatically.

What Ramsey found was this:

1)100 microwatts would cover well beyond 1 km without difficulty. Some of the reason for this was the 12 - 15 dB gain reflector transmit antennas - more transmit antenna gain equals greater range.

2) It is possible to achieve total polarity separation through a +/- 10 degree polarisation arc. That means you can effectively "null" the V signal away from the H - and in reverse - with about a 20 degree "adjustment window" for each. This makes simultaneous V and H or switchable V and H very practical with simplistic uncomplicated (read: inexpensive) transmit and receive antennas.

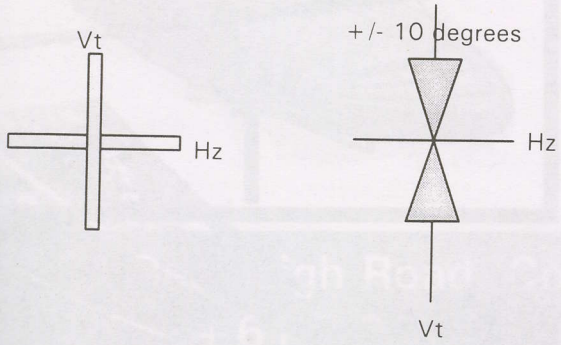
Where this could be used

In any region where the 950 - 1450 region is in use terrestrially, you can forget about "broadband translator" technology. But Ramsey has also found it is possible to take a "chunk" of L-band, such as a single transponder 4000 GHz (1150 L-band) from one satellite (Euro bouquet from As2), another transponder from a different satellite or polarity (such as MediaSat from Optus B3 (12.336 centre) and so on - to fill up as required the entire 500 MHz L-band range. Then having "mixed" them together - reshoot them out to a housing development, a small town, an apartment complex. Or, find a locally "clear frequency spot" (between 950 - 1450) and after L-band filtering, "stick" the Translator signal in that spot.

None of this reduces the original plan to also use 1450 - 2150 for SDS-type transmissions - it merely increases the options that will become available as the technology matures.

The SDS world just became more versatile as those who participate in the SDS Work Shop in Melbourne will learn.

TWO polarities can occupy essentially the same bandwidth using SDS - even with sensitive digital format. "Lock window" is 10-15 degrees "wide".



Coconut palms do not a good antenna make

"REAL" satellite guys have dishes bigger than their house

by Bill Hyman, PCS-TV
PO Box 340
Pago Pago, American Samoa

I have quite a history of buying large dishes from faraway sources - such as Kiwiland. The first 7 metre dish came from RF Antenna in Motueka (**1**). It was so "dense" (with quarter-inch thick fibreglass panels) that only very heavy equipment could move even the small parts. And that was in 1983. And the first television programme ever seen in American Samoa by satellite on a private dish was *Sesame Street*, relayed through an Australian uplink service. That's for the record.

If you live where "normal" or "average" signal levels are below 25 dBw, you already know that virtually any dish you can locate, afford, transport or install will be smaller that you would like to have. As satellite footprint levels approach 20 dBw, any dish that you can fit onto your property (assuming you have a typical piece of land) will be too small to be satisfactory. And below 20 dBw, well ... you will need to win Lotto to buy an adequate antenna.

The original 7 metre was lethal but we were novices and not bright enough to recognise the dangers. We caught *Sesame Street* while the dish was still laying on its back on the ground and I was testing the electronics. One of the few advantages to living as close as we do to the equator (14.16S, 170.43W) is the virtually overhead position of geostationary satellites. To move the antenna from the testing pad to the actual mount position required a lifting bar - something a suitable crane could grab hold of. It was while I was ecstatic with Sesame Street that a temporary plank supporting the multi-ton monster

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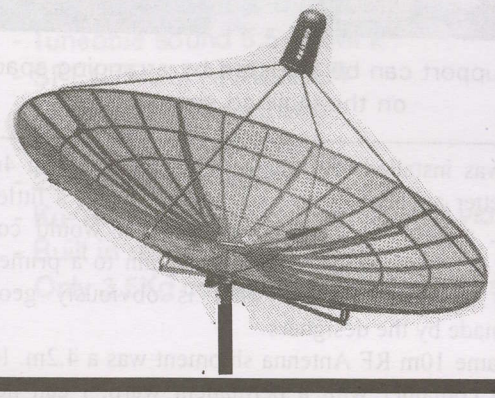

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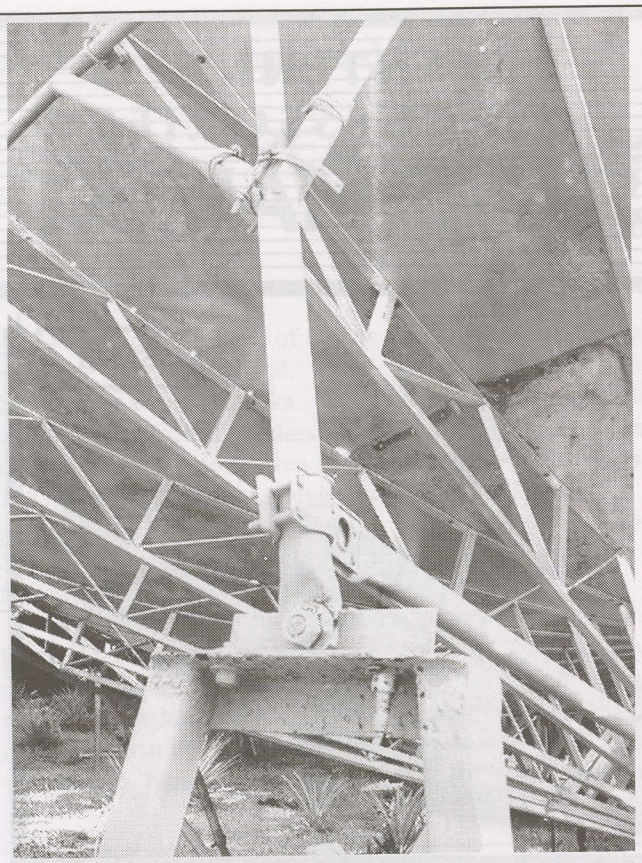

Turning the dish 180 degrees, customising "Y" supports for the new mount on a rebuilt 7m.

broke. As it fell, one worker's fingers lost everything but the exposed bone and another would have been dead save a hard hat that looked like it had been in World War 1 - and lost, after the accident. The 7 metre fibreglass dish was, in my amateur judgement, much too heavy for the frame. This would be validated when a cyclone creamed the antenna bending half of its 24 support truss arms double. Rebuilding, I dismantled the entire antenna, removed every other truss arm (leaving 12 for the original 24), and created concentric rings to help the dish maintain its parabolic shape. The dish continued to function, and was frequently rebuilt or modified, until earlier this calendar year. The 7 metre size ultimately turned out to be a functional illusion. When in 1993 I finally acquired a container load of antennas from Pacific Antennas (NZ), a 5 metre solid in that shipment proved to be the equal of the 7. Oh well - the 7 produced permanent memories including my first Sesame Street reception!

Once you have "satellite fever" it is akin to picking up Malaria in the tropics. If you live in the tropics to begin with and satellite fever sets in - well, there is no cure.

Encouraged by my modest results I ordered a ten metre RF Systems professional dish from the states. I asked them to modify some of the design parameters - make the antenna bottom heavy (for example). I envisioned it more or less laying on its back, supported by two communication towers, looking up through the coconut palms and banana plants. It arrived in reverse; top heavy. After installation (assembling a ten metre with no prior experience is a book unto itself), the dish would not track. That was when I discovered the declination had been permanently built-in. Naturally the declination was not for 14.16S. Solution? The front support for the ten metre monster had to be adjusted by the declination amount. Figuring it out was easier than implementation - jack up the front of the several-ton antenna (hoping the jacks don't slip or the wind come up to nudge the dish off the temporary jack). Then while 15 feet in the air supported by my legs intertwined through the front dish support tower, settle down with an under powered "hand" drill to create a 1 inch diameter hole in a 3/4" thick piece of tempered steel. I knew that if the drill bit bound - a given - the torque of the drill would rip me off the tower top and I'd fly through the air and quite probably kill myself. This was one of the more stressful tasks I had undertaken in my life.

Ten years down the track the steel used in the antenna was rusted beyond further safe use. Television station KVZK,

Front support can be adjusted by arranging spacers on the inclined screw.

Back lower plate was made adjustable on sliders at the base.

where it was installed, eventually replaced it with a 4m that worked better anyhow. It still sits there, rusting a little more each year, and in the back of my mind I would consider rebuilding it, changing from the Cassegrain to a prime focus feed, and trying to correct what is obviously geometric mistakes made by the designers.

In the same 10m RF Antenna shipment was a 4.2m. It came out of the container with a permanent warp. I can hear the conversation at the yard that sold me this: "*Hey, this 4.2m with the warp. Should we trash it??*"

"***Naw** - wait until somebody far away orders a 4.2 and then ship it to them. It will be so far away that they will never be able to return it.*" To which I might add - probably never even know the dish was under performing as well. The dangers of

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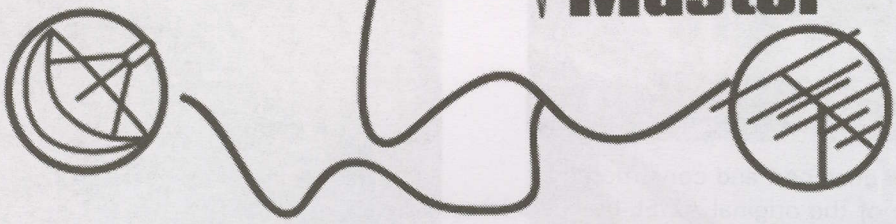
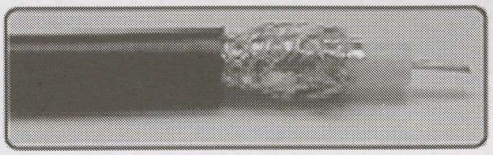
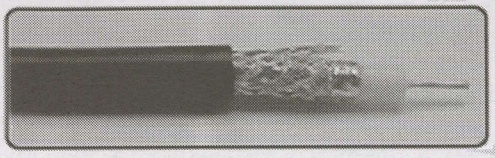


RG6 quad cable



RG6 dual cable



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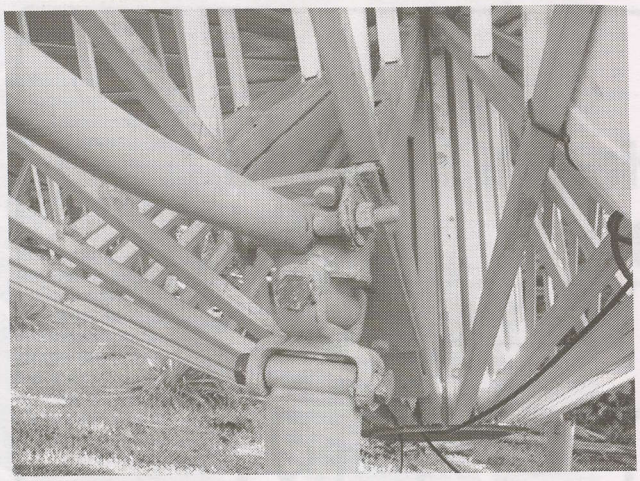


A universal joint was designed and constructed to bolt to the steel plate of the original AZ/EL brackets at a level to align with turning points of "Y"s.

being at the end of the line - you only get the crud that cannot be sold to closer buyers!

In my container shipment from Pacific Antenna, a pair of 7m dishes. One I sold to the Nuanua Wireless Cable but they went out of business before the antenna was paid for. The second 7m sat in my warehouse for a decade until I elected to use it as a replacement for the cyclone damaged original 12 arm/truss 7m. Now the fun began.

The dish was designed for an AZ/EL (azimuth over elevation) mount. Our windy conditions suggested a polar mount would be stronger and I built one. By this point the original support ring had rusted badly and it was a replaced with a locally made product constructed from 1.25" water pipe. I welded "Y" brackets at the N(orth) and S(outh) points of the new support ring with tails the correct length to compensate for our 2.5 degree declination. Standing looking at it one day I realised the tails would not carry the weight of the dish; a stronger support (bobbin), preferably located at the centre of the dish, was required. The problem was the turning axle of the polar mount would have to go right through the dish support bobbin. Back to the drawing boards. My solution was to return to the steel support arms originally designed for the AZ/EL mount. To do this, the dish had to be turned 180 degrees (around) transferring front for back. Now the front "Y" became the rear support and had to be extended to twice its original length. The new back lower frame support was

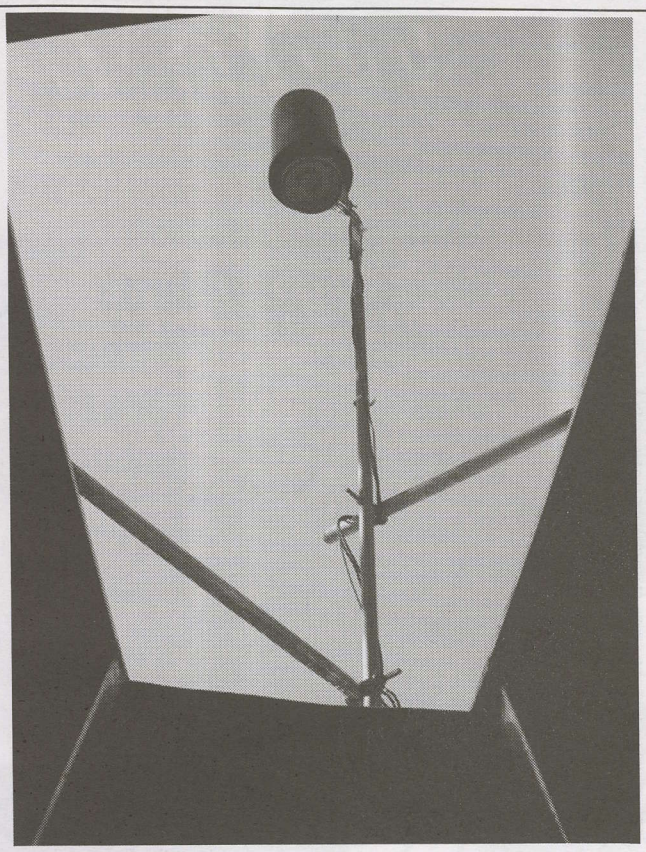
Half in - half out. Climbing through hinged panel to enter dish surface area.

Feed support pipe has universal joint at base with two supports to perimeter of the dish; one N-S, the other E-W. This has many advantages over a standard tripod mount.

made adjustable on sliders at the base. And the front support could be adjusted by arranging spacers on the inclined screw, relying on slight flexing of the "Y" support. Finally, a universal joint was constructed and bolted to the steel plate of the original AZ/EL brackets, aligning precisely with the turning points at the front and rear "Y"s. Satisfaction? The dish tracks like a dream through the full orbit belt, and it is a one man operation.

Because the central support is offset it is easy to see straight through the centre of the bobbin from the bottom of the dish to the feedhorn. Plates have been installed at the top and bottom of the bobbin with holes drilled so the feed horn shows when it is centred. The dish is panelled with solid aluminium in the centre and at the bottom. Higher up, on the outside edges, it is mesh which significantly reduces the wind loading - most of the wind strikes the upper dish panel segments.

The feedhorn mount is of my design. Basically, a vertical pipe supports the feedhorn offset from the dish centreline by the radius of the horn. The support pipe has a universal joint at its base and only two support arms to the perimeter of the dish; one N-S and the other E-W. This has many benefits and I recommend this as a replacement for any tripod style mount. It is feasible for smaller dishes where a dish can be locked very firmly in one position (such as on the side of a tower) for the N-S and E-W supports to be adjusted to bring in the satellite. On another dish I installed knee joints on levers in the support arms to allow adjusting them by pulling the levers. This allowed me to zero in on a satellite rapidly, tighten the bolts at the knee joints and connecting a cross piece so the knees could not bend without their removal.



To aid in getting into the dish for adjustments and maintenance, one (small) panel within the solid aluminium reflector section has been hinges (left) through which you can view the feed and support (right).

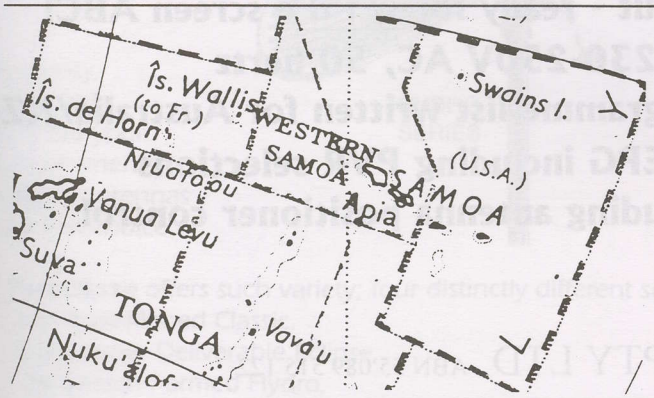
A tripod mount often has at least one of its arms at a high part of the dish. If any arm is adjusted the other two have to be compensated bit by bit until the feedhorn is centralised and the correct distance from the dish surface. With my system the feedhorn is centralised by visually sighting up the bobbin and adjusting the two accessible support arms. The focal point is adjusted by sliding its support pipe into the main support pipe after loosening a hose clamp. Standing in the centre of the dish the sliding pipe can be pulled right out of the main support pipe with the (LNB) electronics for any maintenance work.

With such large dishes involved, I found one easy way to get up into the dish for work was to make a small reflector panel mount on hinges. I turn a small fastener, swing down the panel "door" and climb onto the surface. Once there, the feedhorn support pipe can be "climbed" by placing feet on the N-S support arm to (for example) remove or replace a circular polarisation wafer (photo, p. 10).

The E-W arm can be moved very quickly to bring in adjacent or nearly adjacent satellites without even moving the dish. Remember that most dish designs will function with an offset satellite up to 5-7 degrees removed from boresight. A second feedhorn with its support pole hose clamped to the E-W arm can be installed to access two (or even three) satellites at a time (each with its own feed, LNB and feedline). When I was switching between satellites more frequently, I installed an electric dish actuator arm to adjust the support arms. The N-S arm adjustment was very useful for tracking satellites on an inclined orbit. I discovered that offsetting the feedhorn by up to perhaps 7 degrees has a negligible effect on the actual signal level received. At one point in my antenna development I was receiving satellites removed by as much as 40 degrees from the normal focal point position (the support pipe would be half or 20 degrees in this example from its normal position). When you do this, at the extremes of the N-S adjustment the E-W arm has to be moved slightly (but only slightly) to repeak the signal.

Onward and upward

This much modified 7m is perhaps the second-best dish I have ever had. The best was a one-off handmade dish constructed from scrapped aircraft aluminium. It was 6.5 metres and had only stainless steel fittings (a real benefit in the humid and wet tropics). So far it has survived two cyclones and is essentially unweathered after 15 years. The present owner has lost interest in satellites now that analogue is gone and digital requires much greater precision with the full system. I think I'll see what he wants for it!



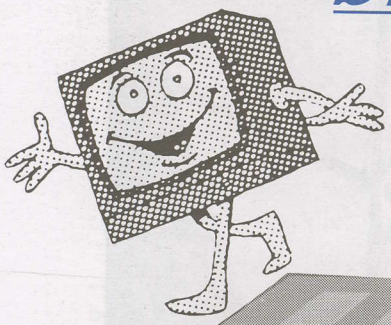
Where are we? American Samoa and (Western) Samoa sit side by side.

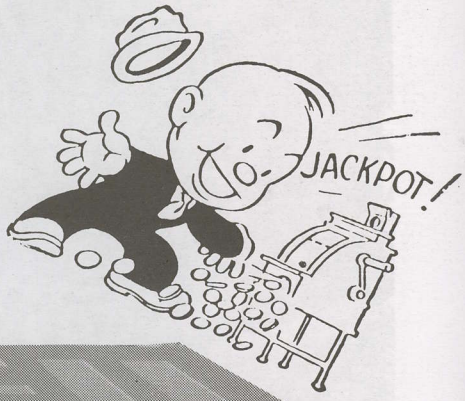
1/ Moteka was the birthplace of large South Pacific Kiwi-built monster dishes.

STRONG AUST NEWS

September 2001

STRONG SRT4890





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This one is for Peter Lacey

Lightning Blast: Cleaning up after Ten Hiroshima A-bombs

Perhaps the most terrifying demonstration of the raw power concentrated in a stroke of lightning occurs when something "hit" assumes an entirely new form or state. For example, the plastic shower in the house at ground zero. The shower was floor mounted with hardware to a tile covered poured concrete floor. On the roof above, a 2m x 3m copper tubing constructed solar hot water heater system. The heated water, assuming the sun was shining, was stored in a 80 gallon tank.

Copper and plastic pipes connected the 80 gallon tank to a cistern for the intake, the water rose through the roof mounted copper coil panels for heating and went back to either a storage tank or to a shower or sink that was drawing hot water at the moment.

Lightning struck the roof mounted copper solar water heating panel with such force (see p. 32 here) the copper pipes and flashing melted into a glob. But for that instant when the lightning merged with the copper, several thousand degrees centigrade over powered the copper. In a "flash" the copper became molten, fused and then rapidly cooled into contorted lumps. In that fraction of a second when the temperature super heated the water in the pipes the tank and solar panel content went from a liquid to steam. And the steam expanded with such force that the close loop system *exploded*.

Piping running to sinks, the shower, bathtubs, the clothes washer turned from water carriers to steam carriers. The pressure went from 40 pounds per square inch to thousands of pounds per square inch. This tore the soldered and PVC-glued pipe joints apart, releasing the steam's energy with enough force to turn 150cm thick concrete floors (through which the pipes ran) into piles of concrete rubble.

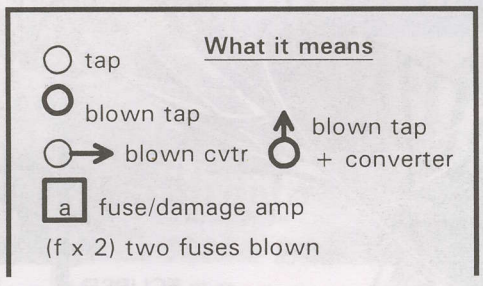
The exploding pipes under the shower stall sent it skyward like a rocket, driving it into the ceiling where the plastic shower stall ran into heavy timbers and like an accordion compressed from its original 2.2m height to less than 1 m. It was left hanging from the ceiling, quivering, a dwarf of its former self.

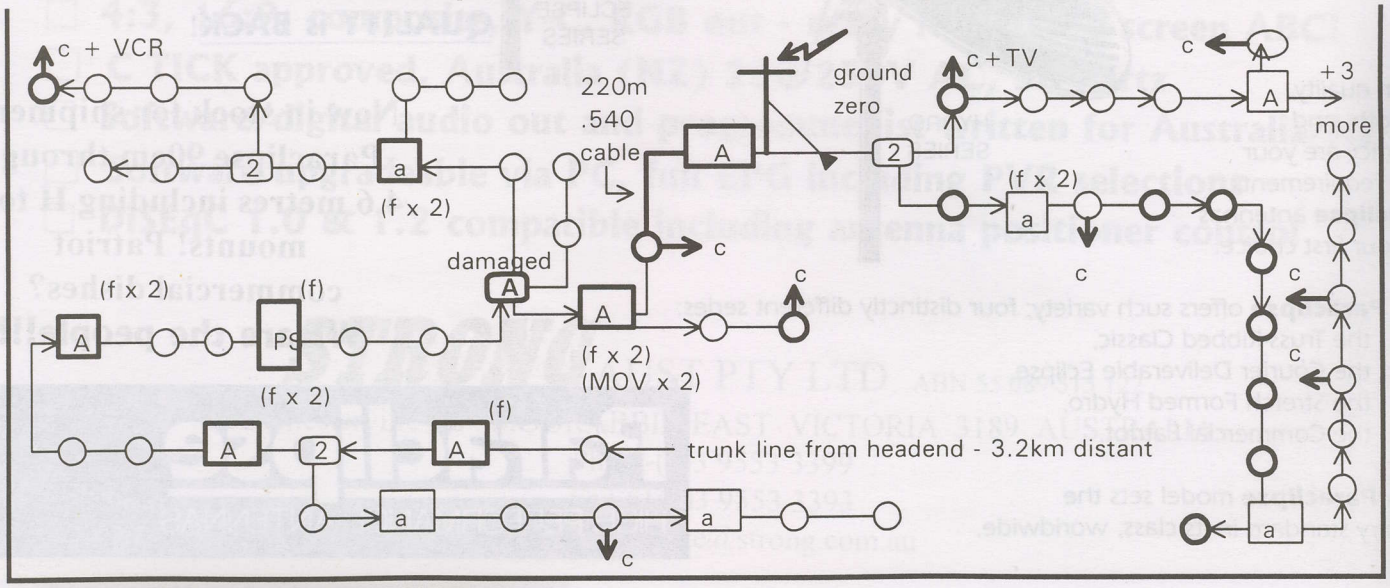
In the diagram below we see a segment of the Far North Cable TV plant - that region where 80% of the lightning damage occurred. Off the map-sketch, as far away as 2.1km airline but as much as 8.2km via cable lines, cable converters blew power supplies. More than 6 km away from the epicentre, at the cable headend, two Mitsubishi S-VHS video machines ground to a stop never to operate again.

Cable damage

Setting aside the home's hot water system that turned into a miniature atomic bomb, the most amazing result at the cable plant was a 220m section of .540 (that is 540/1000 of an inch) trunk cable which simply went away. On our diagram below the epicentre concrete power pole where the lightning went to ground is in the centre. Immediately to the left, shown as a heavier black line, a buried section of .540. The top (uphill) end ran into a cable trunk amplifier directly under the pole (probably not a good place to be under the circumstances). The downhill end ran 220m underground (around 1m below ground) and then surfaced at a directional coupler and customer tap. The house connected to that tap lost their cable converter (the power supply blew up - literally) and a 3-way splitter (printed circuit board traces connecting the ports evaporated).

When we attempted to send signal through the 220m length, nothing appeared at the uphill end. A voltage test and then a continuity test produced identical results: nothing. Using an underground-cable locator machine (like a buried treasure locator except this devices seeks out flowing AC currents and logs onto the 50 hertz pulses to detect where the cable is buried) we started at the directional coupler/pedestal





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and began walking up the hill. The 50 hertz buzz quit. Almost immediately. Hand digging revealed why. The .540 cable's underground pathway was a vacuum - a circular tube-shaped cavern 1m underground littered with grey and white powder. The .540 cable had vaporised, like the copper water pipes, and the moisture present in the earth merged with the superheated copper centre conductor plus solid aluminium sheath to create a situation almost identical to the exploding water pipes under the concrete floor at the epicentre home.

The erratic nature of lightning's many fingers of travel is apparent in our diagram. In most areas, the damaged cable parts (indicated with a **bolder** black symbol) were well scattered. A heavy **black** circle with a heavy **black** short arrow line and the letter "c" indicates the tap (the circle) blew and the converter at the end of the customer drop line also blew (c) . In the interest of not making the diagram hopelessly cluttered, we have left out most of the non-cable damage (telephones, microwaves, hot water tanks, water pumps, VCRs, TV sets - a long list indeed). As many homes not connected to cable lost appliances as those that were putting an end to any theory that our cable system was a "carrier" of the lightening disease. Cable (subscriber) penetration in the affected region is high - slightly more than 50% so it was a suitable test bed of this factor.

The most frequent loss was the passive cable tap-off devices. They mount at ground level, are grounded at the point of installation, have AC bypass circuits built in so that only RF (cable TV signal) passes from the street main line through the tap-off and down the RG6 cable to the home. Inside the home, approximately half of the TV sets are cable ready (they tune the full cable frequency range directly without a set-top converter). The tap-off units routinely blew up because coupling capacitors (typically rated at 600V - hopelessly under the peak surge of the lightning) opened and/or printed circuit traces evaporated on the small PC boards. Several puzzlers here - a two-outlet (two home) tap-off would have one side totally blown out (capacitors open, copper circuit board traces gone) while on the same board, mm spaced away, the second output side was clean and still functioning.

Every line amplifier was multi-protected and in fact only two of 18 units affected sustained damage that could not be corrected by replacing fuses, circuit breakers or MOV/thryistor lightening surge protectors. Those two sustained PC board damage (ugly black scorch marks, parts no longer recognisable or able to be identified, traces lifted and gone from the board). With the exception of tap-offs, most of the serious damage occurred 500m or more (in cable) away from the epicentre. On the other hand, most of the serious household appliance damage occurred within a 500m radius of epicentre.

Houses that lost cable converters seldom also lost taps; and also the reverse (if they lost a tap, the converter was usually good). Taps that were separated from the epicentre by amplifier fuses that blew were just as frequently damaged as those closer to the ground zero point. Fuses protected amplifier boards, but not tap-offs on the far side of the fuses.

The cable TV plant amplifiers operate from a 45-70 volt AC range supply; the AC is carried on the same cable as the RF. At each amplifier location, the AC is diverted to an amplifier built-in AC to DC supply that creates 24 VDC to operate the actual amplifiers. In addition to (10 amp) AC fuses on the

input and output side of each amplifier, the 24 VDC power supply has its own 5 amp fuse. If the 10 amp AC side fuses were blown, the DC fuse would also be blown. In a handful of locations 1-3 km from epicentre, only the DC fuses went.

One 230 VAC mains / 70 VAC AC cable supply voltage power station was involved in the damage area. Going back towards the headend from the epicentre, as soon as the power supply source changed all damaged stopped (for whatever reason the lightning seemed uninterested in going further than where we switch to a different AC mains supply). However, in the opposite direction we continued replacing AC side fuses well into the next power station's region.

For those tap-off locations nearest to the grounding point of the lightning our buried RG6 connecting the tap-off unit to the home cooked like apiece of well done bacon. The outer plastic (weather) covering shrivelled and shrank, long slices appeared in the post-strike wrinkled skin up to 4 cm in length. The dual shielded cable's braid + foil disappeared along the first 1/2m to 1m of drop line. Beneath the sliced and diced and burnt wrinkled jacket - there was no shield left. If the outdoor connection point drop cable was bad, universally the converter blew and at least half of the time the cable as it connected to the converter indoors also shrivelled, sliced and the foil/braid shield at the back of the converter evaporated. One home close to epicentre had a F connector barrel splice around 1m behind the TV set - the folks had moved their TV set after the cable was originally installed and we had increased the indoor end to reach the new location. Outside on this drop, no damage. Inside, the converter on top of the TV set became so hot that the plastic case turned to liquid and ran down onto the top of the TV set. Needless to report - the converter was shot. But not the TV set or VCR. And that barrel splice? It became so hot the barrel metal melted and fused with the F connectors. How much heat does that take??? Whatever the correct answer to that question - the rug was badly scorched six inches below where the barrel melted.

Our standard hook-up procedure is to run the drop cable into the cable box, then to the VCR, and then to the TV set. Most puzzling were the half dozen VCRs, the meat in this sandwich, that blew up (not repairable for any reasonable price) but the converter in front and the TV set after were just fine!

More affluent homes that have purchased cable-ready (all frequency tuning) VCRs, using these in front of their TV sets in lieu of our set-top boxes, experienced some interesting faults. A week-old top of the line Sony VCR refused to come on after the strike. The local repair shop took $125 of the customer's money and pronounced it sound again. When we went by to reinstall the cable (which was not damaged - only the VCR suffered) we found the Sony would no longer produce an on-screen menu for programming, and, the "one touch automatic tuning" (which zips from 50 to 900 MHz searching for, finding and memorising each operational TV channel along the way) did absolutely nothing when told to relog the 55 cable TV channels. The Sony shop *then* pronounced it dead and the insurance company allowed the home owner to bring in a new one - on them.

The lessons in all of this? Some lightning strikes are so complex that even the best protection procedures will fail. And lesson number two? That lightning can be spelt lightening as well but be careful how you use it!

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 September 2001

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym	Receivers and Errata
Ap2/76E	AXN	3920/1230II	up to 8	7/8	28(.340)	Tests, promos, **up to 5 chs occ FTA**
Thcm3/78.5	SkyChAust	3695/1455V	up to 3	3/4	5(.000)	Finally settled here from As2
	MRTV-Mynr	3676/1474H	1	2/3	6(.000)	erratic service
	Mega +	3640/1510H	12	3/4	28(.066)	Mega Cosmos here; use exact Sr
	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)	USA religion chs, CMM music FTA
	Nepal TV+	3554/1596V	3+ in mux	3/4	13(.333)	FTA + CA mux
	3ABN +	3551/1600H	4+ TV, radio	3/4	13(.330)	3 Angels USA, Ch of Hope, + 9 radio
	Alpha TV	3430/1720H	1	2/3	3(.255)	Greece SCPC-OK in Australia
	PTV1	3424/1730V	1	3/4	3(.333)	FTA, also 3420 PTV3
	TV Maldives	3412/1738V	1	1/2	6(.312)	FTA (reaches SE Australia)
	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)	FTA
InSat 2E/83	**ETV mux**	4005/1145V	6+ TV	3/4	27(.000)	increasingly active mux; wide beam
-	**DD2**	3910/1240V	1	3/4	5(.000)	SCPC, ; OK E. Aust. wide beam
	DD National	3830/1320V	1	3/4	5(.000)	SCPC; OK E. Aust. wide beam
	Kairali TV	3699/1451V	1	3/4	3(.184)	SCPC, OK E. Aust wide beam
	AsiaNet	3683/1467V	1	3/4	4(.340)	SCPC, OK E. Aust. wide beam
	Jaya TV	3615/1535V	1	3/4	3(.255)	testing SCPC; OK E. Aust. wide beam
As2/100.5E	**Euro Bouqt**	4000/1150H	6TV, 21r	3/4	28(.125)	FTA (TV5 teletext); MCM gone
	Reuters Sing	3907/1243H	1	3/4	5(.632)	occasional feeds, **some FTA** MPEG2
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	FTA SCPC, teletext
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	FTA SCPC, teletext
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	FTA SCPC, radio APID 81
	In. Mongolia	3828/1322H	2	3/4	8(.397)	FTA: #1 Mongolian, #2 Mandarin
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	Mostly CA; **some FTA**
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	**FTA** & CA
	WorldNt/US	3764/1386H	1 + 20 radio	3/4	6(.100)	FTA; up to 20 radio channels; SA format
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	FTA SCPC, radio APID 256
	Jiangx/JXTV	3727/1423H	1	3/4	4(.418)	FTA SCPC, teletext, radio APID 81
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	FTA SCPC, + radio APID 80
	Hubei TV	3713/1437H	1	3/4	4(.418)	FTA SCPC, radio APID 80
	Henan/Main	3706/1444H	1	3/4	4(.418)	FTA SCPC, + radio
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)	Thru TARBS Aust, subs now poss?
As2/100.5E	**Feeds**	4086/1064V	1	3/4	5(.632)	FTA SCPC feeds
	TVSN	4033/1117V	1	3/4	4(.298)	Occ. **FTA**, not same as Aust. version
	Jilin Sat TV	3875/1275V	1	3/4	4(.418)	FTA SCPC, + radio
	HeiLongJian	3834/1316V	1	3/4	4(.418)	FTA SCPC
	JSTV	3827/1323V	1	3/4	4(.418)	FTA SCPC, + radio
	Anhui TV	3820/1330V	1	3/4	4(.418)	FTA SCPC + radio
	ShaanxiQQQ	3813/1337V	1	3/4	4(.418)	FTA SCPC, radio APID 81
	Guan/GXTV	3806/1344V	1	3/4	4(.418)	FTA SCPC, radio APID 257
	Fashion TV	3795/1355V	1	3/4	2(.533)	FTA SCPC, reload VPID 308, APID 256
	MSTV	3791/1359V	1	3/4	4(.340)	FTA SCPC
	Myawady	3766/1384V	1	7/8	5(.080)	FTA SCPC - difficult to load
	Saudi TV1	3660/1490V	3+/tests	3/4	27(.500)	FTA MCPC includes MTA
As3S/105.5	Zee bouquet	3700/1450V	9TV	3/4	27(.500)	Mediaguard CA, **ch 8 FTA sometimes**
	ETV Bangla.	3749/1401V	1TV	3/4	4(.340)	PowVu and now CA
	Arirang TV	3755/1395V	1	7/8	4(.418)	FTA SCPC; reported audio problems
	Now TV	3760/1390H	2	7/8	26(.000)	includes TECH TV from USA, both FTA
	Star TV	3780/1370V	17(+)TV	3/4	28(.100)	NDS CA (Pace DVS211, Zenith)
	Star TV	3860/1290V	14(+)TV	3/4	27(500)	NDS CA (Pace DVS211, Zenith)
	Star TV	3880/1270H	12(+)TV	7/8	26(.850)	NDS CA (Pace DV211, Zenith) + **1 FTA**
	Indus Music	3900/1250V	5TV	7/8	27(.895)	PAL, NTSC, 1 ch CA
	Star TV	3940/1210V	12(+)TV	3/4	26(.850)	Recenty started -NDS CA as above
	CNNI	3960/1190H	6(+)TV	3/4	26(.000)	PowVu CA; CNN + Cartoons, occ **FTA**
	StarTV	3980/1170V	2+TV	3/4	28(.100)	Most recent addition-NDS, tests only
	Star TV	4000/1150H	7(+)TV	7/8	26(.850)	NDS CA + **info card FTA**
	Sun TV	4095/1055H	1	3/4	5(.554)	"History Channel" testing SCPC
	CCTV bqt	4129/1021H	4(+) TV	3/4	13(.240)	moved from 4115 July 1
	Zee Bqt #2	4135/1015V	4(+) TV	2/3	15(.000)	some FTA + CA
Cak1/107.5	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+) TV	7/8	20(.000)	NDS CA using RCA/Thomson, Pace IRDs
C2M/113E	**TPI**	4185/965V	1	3/4	6(.700)	FTA SCPA; NT/NC only
	Satelindo Bqt	4089/1061H	2+ 1 radio	3/4	14(.062)	ChNewAsV33/A34,
	Indosiar	4074/1076V	1	3/4	6(.500)	FTA SCPC; NT/NC only
	Anteve	4055/1095V	1	3/4	6(.510)	FTA SCPC; NT/NConly
	SCTV	4048/1102V	1	3/4	6(.618)	FTA SCPC; NT/NC only
	MMBM#1	4000/1150H	11TV, radio	3/4	26(.666)	CA, Aust subs avail-sometimes FTA

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(C2M)	**ABC radio**	3976/1174H	2+ radio only	3/4	2(.061)	SCPC radio only - purpose unknown
	Indo. MUX	3880/1270H	3+ TV	3/4	28(.125)	TVRI, others FTA
	MMBM#2	3760/1390H	11TV,radio	3/4	26(.666)	CA, Aust subs avail-10 **radio** typ**FTA**
	Brunei/Sing	3733/1417H	1TV	3/4	6(.000)	FTA; share time, Brunei-23hrs,Sing1h
	RCTI	3475/1675H	1	3/4	8(.000)	FTA SCPC, Australia OK
JcSt3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(.000)	PowVu, some **FTA** (ch # 1,3)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)	CA & **FTA** NTSC: Japan, Taiwan
MeaSat 2	Astro Mux	11.478H (+)	up to 10TV	7/8	30(.000)	+11.664; 18 pay-TV svcs, CA
Op 3/156	**Mediasat**	12.336V/T2	7TV, radio +	2/3	30(.000)	FTA, CA - new chs June-reload
	Aurora	12.407V/T3		2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.532V/T5	Inc Zee TV	2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.595V/T6		3/4	30(.000)	Aust only; * - smart card p. 26
	Aurora	12.657V/T7	6CA testing	2/3	30(.000)	cvrs Aust, NZ 90cm; CA(*)
	Aurora	12.720V/T8		3/4	30(.000)	Aust only;* - smart card p. 26
	Austar/Optus	12.376H/T10		3/4	29(.473)	Austar I-TV and Optus tests
	Austar/Foxtl	12.438H/T11		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.501H/T12		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.564H/T13		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.626H/T14		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.688H/T15	(some FTA ra)	3/4	29(.473)	CA, subscription available Australia
Op 1/160	**ABC NT fd**	12.260V	1TV, 3 radio	3/4	5(.026)	Power level down Aug.; V832, A833
	ABC feeds	12.317H	1	3/4	6(.980)	also 12.326, 12.335; ex PAS8 Ku
	Central 7	12.354H	1TV	3/4	3(.688)	VPID1280, APID 1281
	Imparja mx	12.360H	1	3/4	5(.424)	VPID 1024, APID 1025
	Mediasat#2	12.406V	up to 6 TV	2/3	30(.000)	also try Sr 28.000; FTA & CA
	Mediasat#3	12.424H	3+ TV	2/3	19(.800)	net feeds, Australia only, FTA & CA
	TVNZ DTH	12.456V	1+ TV	3/4	22(.500)	Tests; also 12.706, 12.733; CA, Irdeto
	TelstraSaturn	12.483V	8TV	3/4	22(.500)	FTA tests; typ 0630-0900 NZT wkdys
	Nine Net	12.512H	1 TV typ.	3/4	5(.632)	testing digital feeds
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.644/671V	9TV	3/4	22(.500)	NDS CA, subscription available NZ
	ABC HDTV	12.670H	4TV	7/8	14(.300)	also 12.686 12.706H-same parameters
PS8/166	TARBS3	12.326H	13TV + radio	3/4	28(.067)	TPG/Eurodec CA, occ. FTA
	TARBS	12.526H	13TV + radio	3/4	28(.067)	TPG /Eurodec CA, occ. FTA
	TARBS2	12.606H	13TV + radio	3/4	28(.067)	Tests, inc. ESPN, see TARBS above
	JEDI/TVB	12.686H	11+ TV	3/4	28(.126)	Irdeto CA, **some FTA** tests
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)	PowVu CA
	NHK Joho	4065/1085H	7TV, 1 radio	3/4	26(.470)	PowVu CA & **FTA**; subscription avail
	Japan Bqt	4050/1100H	2	3/4	12(.000)	PowVu CA; NTV Int, Fuji TV
	ESPN USA	4020/1130H	7+TV, data	7/8	26(.470)	PowVu CA; ch 11 DCP-CCP bootload
	Discovery	3980/1170H	8 typ.	3/4	27(.690)	PowVu/CA (some audio **FTA**)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)	PowVu CA & **FTA (EWTN/Fox occ)**
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)	FTA at this time
	Filipino Bqt	3880/1270V	up to 9 TV	3/4	28(.700)	Some **FTA**; also 4040V, 27.686,7/8
	Tzu-Chi TV	38501300H	up to 4	3/4	13(.240))	inc. 'Power TV' - Chinese
	CCTV Mux	3839/1311H	up to 4	3/4	13(.240)	PowVu FTA, replaces PAS-2 svc
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)	was As2; PowVu CA
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)	PowVu, CNN now CA
	MTV	3740/1410H	8	2/3	27(.500)	1-7 CA; #8 **FTA occ. feeds**
PS2/169	Pv Bouquet	12.281V	2+ TV, radio	2/3	27(.500)	PowVu CA, WIN, ABC NT
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)	PowVu CA, WA only - D9234
	HK PowVu	4148/1002V	up to 8	2/3	24(.430)	PowVu CA; some **FTA,** occ feeds
	TVB Mux	4058/1092V	up to 5	3/4	13(.382)	CA feeds to pay-TV
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)	Pv, CA/FTA (**FTA ch 3 only**)
	Feeds	3966/1184V	1	2/3	6(.620)	PowVu (FTA) occ feeds
	Feeds	3957/1193V	1	2/3	6(.620)	PowVu (FTA) occ. feeds
	Aust-feeds	3942/1208V	1	2/3	6(.620)	Mediasat outward bound feeds
	Feeds	3929/1221V	1	3/4	10(.850)	PowVu (FTA) occ sport feeds
	Feeds	3912/1238V	1	2/3	6(.620)	PowVu(FTA) occ. feeds
	Feeds	3898/1252V	1	2/3	12(.000)	PowVu (FTA) occ. feeds
	Middle East	3836/1314V	4 typ	3/4	13(.331)	Threatening CA, have tested NDS etc
	Feeds	3803/1347V	1	2/3	10(.322)	PowVu (FTA) occ sport feeds
	YTN Korea	3769/1381V	2+ TV	3/4	11(.570)	Svcs 1 and 2, CA
	BBC +	3743/1407V	3	3/4	21(.800)	**BBC FTA**, others CA usually

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(PAS-2/169)	**Feeds**	4040/1010H	1	3/4	10(.850)	PowVu occ FTA feeds
	KBS/Korea	4026/1124H	1	3/4	5(.062)	occ. **FTA**, usually CA
	7thDayAdv.	3872/1278H	1	3/4	6(.620)	Sat, Sun 0900+UTC; also sport 3873
	Feeds	3868/1182H	1	2/3	6(.620)	FTA (occ sport); also try 3863,Sr6.100
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498	FTA-typ NTSC-occ sport, live Shuttle
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)	PowVu CA + **FTA**
	occ feeds	3776/1374H	1 typ	3/4	5(.560)	occ feeds, typ FTA; also Sr 5.600
	Korean Bqt	3762/1388H	up to 3	3/4	11(.570))	Korean MUX, reloasd June 01
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)	poss. USA pgming to Carnival Line
I702/176E	AFRTS	4177/973LIIC	8TV, 12+radio	3/4	26(.694)	PowVu CA
	RFO Poly	4027/1123L	1TV	3/4	4(566)	SE spot beam
I701/180E	TNTV	11.060V	9	3/4	30(.000)	eastern spotbeam CA; 8,000 subs
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)	Mediaguard CA, up to 3 ch **FTA**
	TVNZ	4195/955RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ	4178/972RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	RFO-Canal+	4086/1064L	4TV, radio	5/6	13(.347)	east hemi 20.5 dBw thru 2003+
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)	DMV/NTL early version,occ feeds, typ ca
	TVNZ feeds	4044/1106R	1	3/4	5(.632)	SCPC, mixed CA and **FTA** feeds
	NZ Prime TV	4024/1126L	1	2/3	6(.876)	PowVu CA; Auckland net feeds
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)	CA, Leitch encoded
	Ioarana	3772/1378L	1	3/4	4(.566)	FTA SCPC; East Hemi Beam-Tahiti
	TVNZ	3846/1304R	1	3/4	5(.632)	SCPC, mixed CA & **FTA**, feeds
	10 Australia	37691381R	4	7/8	20(.000)	PowVu CA & **FTA; #3 TBN**
	USA feeds	3749/1401R	4?	?	26(400)	16-QAM (not MPEG-2 compatible)

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

ASTRX D 1000CI. SCPC, MCPC, two CAM slots, auto search routine. Reviews SF#78 & #79. LTG Mason 61-3-9457 1222.
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM Pty Ltd, 61-2-9939-4377.
Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICRI 5400. Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, review SF#76.
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. Int. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. Tricky to use.
Nokia 9200. When equipped with proper CAM, does Aurora, pay-TV services provided software has been "modified" with Dr Overflow or similar program was available from (www.BAKKERELECTRONICS.COM), now only from established users.
Nokia 9500/9600. Numerous versions for different world parts; not distributed in Pacific but assistance from Av-Comm Pty Ltd.
Pace DVS211. NDS CA (no FTA) for Star Asia, previously used for Indovision. (Solution 42, 61-2-9820-5962)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818)
Pace DVR500. Original DGT400 modified for NBC (PAS-2) affiliate use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia.
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH(below)- 222 out of production
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review Nov. 1998. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). Scientific Atlanta 61-2-9452-3388.
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-3749)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Aust 61-3-9553-3399.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora, exc. vendor support. Strong Aust 61-3-9553-3399.
Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2, wide screen (review SF#84); Strong Aust (above)
UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faultyP/S. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers.
Xanadu. DVB compliant special-priced receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)

Accessories:

Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A$105, Sciteq 61-8-9306-3738.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 7/8; pgm ch 11 and follow instructions (do not leave early!)

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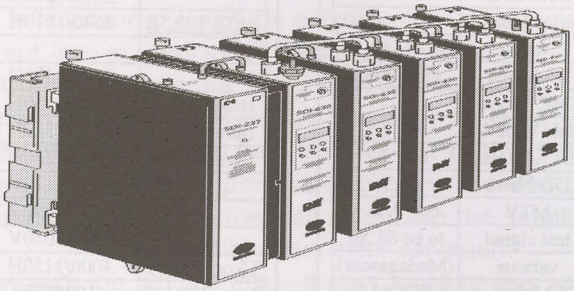

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SatFACTS Pacific/Asian FTA ANALOGUE Watch: 15 September, 2001

BIRD/ Location	RF/IF & Polarity	Service	Errata
I703/57E	3808/1342R	Udaya TV	
	4052/1098R	WorldNet	VOA subcrs.
	4178/972L	MTA Inter.	
I604/602/60E	4166/984	various feeds	
I704/66E	3765/1385R	tests	
	4015/1135L	Mongolia	(SECAM)
PAS4/68.5E	3864/1286V	BBC World	
	3905/1245V	Mah.Vede Vi	6.6, 7.2
	3907/1243H	SET Mid East	6.8, 7.2
	4155/995VV	DD News	6.3
	4181/969H	MTV	6.8, 7.56+
PAS7/72E	3470/1680V	test signal	to be 68.5E
LM1/75E	3980/1170V	various	(Madagascar)
ApStar 2R	3780/1370H	TV Malagasy	(SECAM)
Thaicom3/78E	4155/995VV	DD12 Jam. +	5.5
	3800/1350V	DD Punjabi	5.5
	3634/1516V	tests	
	3616/1534V	ETC Punjabi	6.6,7.-2
	3536/1614V	Jain TV	6.8
	3470/1680V	ETC	6.6,7.02
Exprs 6A/80E	3675/1475R	RTR	(global beam)
InSat 2E/83E	3447/1703V	Kairali	6.6
	348151665V	ETV Marathi	6.6
	3565/1585V	Vijay	6.6
	3603/1547V	JayaTV	6.6
	3650/1500V	AsiaNet	6.6
	3809/1341V	DD5-Tamil	5.5
	3849/1301V	DD-National	5.5
	3929/1221V	DD Metro	5.5
	3961/1189V	DD8-And.Pra	5.5
	4040/1110V	ETV Bangla	6.6
	4089/1061V	DD7-W.Bangl	5.5
ChnStr1/87.5E	3880/1270H	occ feeds/ card	P4 NSW, Ntsc
ST1/88E	3550/1600V	test card	
	3582/1568V	Nila TV	(vintage TV)
Yamal 102/90E	3675/1475R	RTR1	P3 NSW
	3875/1275R	Orbita 1	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
MeSat-1/91.5E	3710/1440H	VTV1,2, 4	
	3880/1270H	RTM-1	
Gz 28/96.5	3675/1475R	RTR	inc +/- 3.7
Chinasat22/98	3900/1250H	tests	+ 3940/1210
InSat 2B/93.5E	4170/980V	DD Gyandar.	NSW on 3.7m
	4161/989H	DD-4 Kerala	5.5
	4125/1025H	DD-11 Gujarati	5.5
	3889/1261H	DD-10 Mahara.	5.5
	3802/1348H	DD-9 Kamats.	5.5
	3725/1425H	feeds	
	2.595H	DD NorthEast	S-band, 5.5

BIRD/ Location	RF/IF & Polarity	Service	Errata
As2/100.5E	388501270H	WorldNet	VOA subcrs
Exp. 9/103E	3675/1475R	RTR	inc +/- 2.6
	3875/1275R	Vrk Apt	
As3S/105.5E	3640/1510H	Asia Plus	5.55, 6.2
	3680/1470H	CETV	6.6
(temp FTA)	3800/1350H	Star Sport	NTSC;5.94+
(temp FTA)	3840/1310H	Channel [V]	NTSC;5.58+
(temp FTA)	3920/1230H	Phoenix Ch	NTSC;6.2+
	4020/1130V	Sahara TV	6.8
	4060/1090V	IndusVision	6.6, 7.2
	4100/1050V	PTV2/World	6.6
T'kom1/108E	4000/1150H	tests	not recently
PalapC2/113E	4160/990H	(France) TV5	5.8, 6.6
	4120/1030H	MTV Asia	6.8,7.56,7.74
	4040/1110H	CNBC	6.8 audio
	3980/1170V	CNNI	6.8 audio
	3840/1310H	TVRI	6.8 audio
	3742/1408V	RCTI	English subcr
AsSat1/122E	3677/1473V	Test card	3933/1217H
ChinS 6/125E	4085/1065V	feeds	seldom seen
JcSat3/128E	3768/1382V	feeds	occ., P5 NZ
	4085/1065V	test card	NTSC, 6.8
Ap1A/134E	4160/1050V	CETV	
	3980/1170V	CETV1	
	3900/1250V	CETV2	
Ap1A/138E	4160/990H	CCTV7	
G25/140E	3675/1475R	ORT Moscow	inc. +/- 5.3
	3875/1275R	feeds, tests	
LMAP2/142.5	3675/1475L	RTR Moscow	+/- 3.5 deg.
Gorizont 33	3675/1475R	tests	+/- 1.3 deg
	3875/1275R	RTR	audio 7.5
Ag2/146E	3787/1363H	GMA	P1/2 s. eqtr
Me2/148E	4080/1070H	test card	occ. use
PAS8/166.5E	3880/1270V	test card, feeds	not full time
	3865/1285H	Napa test card	not fulltime
PAS2/169E	3940/1240V	Napa test card	not full time
SpNet4/172E	3920/1230V	unknown video	
1802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
I702/176E	4166/984R	Feeds	from 177E
	4187/963R	Occ. feeds	
I701/180E	4187/963R	Occ. feeds	
	3845/1305R	Occ. feeds	inc. fromUSA
	3930/1220R	USA net feeds	**FTA** & ca
	3975/1175R	Occ. feeds	

Ap2/76E	3960/1190H	HBO Asia	GI Digiciphcr2
C2/113E	3930/1220H	Filip. Peo. Net	GI 1.5 MPEG
Ap1/138E	4100/1050V	ESPN	BMAC

AsiaSat 3S Bandscan

AsiaSat 3S has had a difficult history - "S" should stand for "survivor" because the original As3 was lost during launch and only after a historic effort brought back to earth and a semi-useful orbit. But we are ahead of ourselves.

3S has one of the famed Hughes Space and Communications (28 C and 16 Ku) packages which includes 14 horizontal and 14 vertical 36 MHz bandwidth C-band transponders and 16 Ku band. C-band coverage is uniform across all transponders - reaching 37 dBw at boresight and exceeding 35 dBw at the end of visible coverage to the north and north-west, dropping to 29 dBw near the equator along the eastern coast of Africa. Australia coverage ranges from 31 to 37 dBw, New Zealand from 31 to 33 dBw.

The original AsiaSat 3 failed during launch by a Proton launch vehicle. "Failure" may be a an over statement - the satellite went into an unplanned totally useless orbit and continued in that earth circling mode for several months. Ultimately a daring "sling shot + boomerang" attempt was made to bring the satellite back into a useful path. The bird was kicked into lunar trajectory at precisely the correct moment when Earth-Sun-Moon gravitational pulls would help it travel out to the moon, circle the moon and then head back to earth. This worked well enough that upon the return trip 3 ended up in a more or less geostationary orbit where it promptly registered an "empty" fuel cell count. So the satellite was "saved" but it had no real commercial value after salvation.

AsiaSat 3S was a year later rush-job replacement. It flew more or less without incident although once into Clarke orbit and sitting at 105.5E some unusual characteristics emerged. The Ku portions were never found to be operating as the manufacturer had promised. And, the C-band polarisation isolation (how many dB difference there is between V and H signals when V is measured as an H service and H is measured as a V service) proved to be below specification.

Despite these problems, As3S has been a big time strongly working satellite that easily duplicates the coverage of its younger sibling AsiaSat 2 (100.5E). The Ku band services have never been commercially acceptable although Telstra (Australia) earlier this year signed up for between 1 and 3 of these 54 MHz bandwidths and tests are underway to determine how this might be used to expand the firm's Internet and data delivery presence in Australia. The Ku services from Telstra will, by the way, be located between 12.280 and 12.720, either vertical or horizontal but are most likely to be centred on 12.540, 12.,600, 12.660 and 12.720 with a boresight EIRP of up top 53 dBw (that's stronger that Optus provides at boresight into Australia, equal to Optus peak power to New Zealand).

3640Hz (Hong Kong) Asia Plus analogue PAL, audio 5.55 and 6.2
3660Vt (vacant at this time - was Urdu Network)
3680Hz (China) CETV China Entertainment TV analogue PAL, audio 6.6
3700Vt (India) Zee Network Mediaguard CA MPEG-2, Sr 27.500, FEC 3/4 (MCPC: Alpha TV Punjabi, Alpha TV Marathi, Alpha TV Gujarati, Zee English, Zee MGM, Ze Cinema, Nickelodeon India, Zee TV, Zee Music)
3742Vt (India) SABe TV MPEG-2 FTA, Sr 3.300, FEC 3/4 (SCPC)
3749Vt (India) Ekushey TV MPEG-2 FTA, Sr 4.340, FEC 3/4 (SCPC)
3755Vt (Korea) Arirang TV (World 1) MPEG-2 FTA, Sr 4.418, FEC 7/8 (SCPC)
3760Hz (Hong Kong/USA) Now + Tech TV MPEG-2 FTA, Sr 26.000, FEC 7/8 (MCPC: English)
3780Vt (Hong Kong based) Star TV Videoguard CA MPEG-2, Sr 28.100, FEC 7/8 (MCPC: Star + India, Channel [V] India, Star Movies India, Star News India, National Geographic, CNBC India, ESPN India, Star Gold)
3800Hz (Hong Kong) Star Sports analogue NTSC, audio 5.58 & 5.76 Mandarin plus 5.94 & 6.20 English
3820Vt (Hong Kong) Phoenix occasional feeds, tests MPEG-2, Sr 27.000, FEC 3/4 (MCPC)
3840Hz (Hong Kong) Channel [V] Asia analogue NTSC, audio 6.20 Mandarin, 5.58 & 5.76 English
3860Vt (Hong Kong based) Star TV Videoguard CA MPEG-2, Sr 27.500, FEC 3/4 (MCPC: ESPN Taiwan, Star Sports Taiwan, ESPN Asia, Star Sports Asia, Star Sports India, ESPN Philippines)
3880Hz (Hong Kong based) Star TV Videoguard CA MPEG-2, Sr 26.850, FEC 7/8 (MCPC: Star World India, Channel [V] International, Fox News, Sky News, Viva Cinema, National Geographic, Grenada UK, Phoenix Chinese, Star + Pakistan)
3900Vt (India) Indus Vision + TV MPEG-2, Sr 27.900, FEC 7/8 (MCPC)
3920Hz (Hong Kong based) Phoenix Chinese analogue NTSC, audio 6.20 English, 5.58 & 5.76 Mandarin
3940Vt (Hong Kong based) Star TV Videoguard CA, MPEG-2, Sr 26.850, FEC 7/8 (MCPC: Star World Asia, Star Movies Int., Star Mandarin Movies, Star Chinese Channel, Channel [V] Taiwan, National Geographic, Star Plus Pakistan, Grenada UK)
3960Hz (Hong Kong based) CNN International + PowerVu CA, MPEG-2 variant, Sr 26.000, FEC 3/4 (MCPC: CNN I-Asia, Cartoon Asia, Cartoon Taiwan, Cartoon Philippines, Cartoon Aust/NZ, Turner Classic Movies)
3980Vt (Hong Kong based) Star TV Videoguard CA, MPEG-2, Sr 28.100, FEC 3/4 (MCPC)
4000Hz (Hong Kong based) Star TV Videoguard CA, MPEG-2, Sr 26.850, FEC 7/8 (MCPC: Star Movies Mandarin, Star Chinese, Channel [V] Taiwan, Phoenix Movies, National Geographic, Star Movies Intl + FTA Phoenix Info News)
4020Vt (India) Sahara TV analogue PAL, audio 6.80 Hindi
4060Vt (India) Indus Vision (tests) analogue PAL, audio 6.60 Urdu, 7.20
4065Hz (various) reserved for feeds, typically Sr 2.200, FEC 3/4, SCPC
4095Hz (China) Sun TV (History Channel), MPEG-2 FTA, Sr 5.554, FEC 3/4 English and Mandarin
4100Vt (Pakistan) PTV2 (0600-1500 PST) and PTV World (1500-0600 PST) analogue PAL, audio 6.60
4129Hz (China) CCTV bouquet (CCTV 4, 9 +), MPEG-2, Sr 13.240, FEC 3/4 (MCPC)
4135Vt (India) Zee Network Mediaguard CA, Sr 15.000, FEC 2/3 (MCPC - Zee News, Zee Education CA, + Kaveri, Bharati FTA)

TUNING IN THE INDUSTRY'S TV PROGRAMME

SPACE Pacific, the Asia-Pacific industry membership trade association, has produced (and continues to produce) a series of one hour television programmes. These "SPACE Pacific Report" shows, hosted by Bob Cooper, cover a range of topics of interest to installers and enthusiasts. Show numbers and content are as follows: **#9901-** Spectrum Analyser techniques, **#9902-** Feeds and LNBs, **#9903-** Dish antenna designs and problems, **#9904-** The dish marketplace, and, "tiny parts," **#9905-** Dr Overflow (Nokia) software (Robin Colquhoun), **#9906-** How the uplink works (tour of RCA's Vernon Valley site), **#9907-** Uplink Two, including uplink transmitters, **#9908-** Digital Basics (Mark Long), **#9909-** Real World Installs (Mark Long), **#9910** - Installing a polar mount dish and signal level test equipment, **#9911** - "SPIN" (the hidden side of satellite). **#0012** - First Report from SPRSCS 2000 (recorded in Melbourne June 28, 29 - "Ideal IRDs," more), **#0013** - Second Report from SPRSCS 2000 (recorded in Melbourne June 29, 30 -"ABA Blackspot session"), **#0014** - Naughty Nokia from SPRSCS 2000; **#0101** - Preview of new technology including SDS from SPRSCS 2001 (Septemer 27, 2001 Melbourne). "Report" is broadcast by Mediasat on Optus B3, 12.336Vt, ad-hoc channel 4(*) (Sr 30.000, FEC 2/3). The coming-weeks schedule: **Sunday September 16** - 9909 at 0200-0300 UTC (1400 NZ, 1200 AEST, 0900 Western Australia; repeats 0700 UTC/7PM NZ, 5PM Sydney, 2PM Perth). **Sunday September 23** - Show 9910, same times as September 16; **Sunday September 30** - Show 9911, same times as September 16; **Sunday October 7** - Show 0101, same times as September 16; **Sunday October 14** - Show 0012, same times as September 16; **Sunday Ocotber 21** - Show 0013, same times as September 16; **Sunday October 28** - Show 0014, same time as September 16 (Note: Daylight savings time adjustments will be made). (* - Mediasat may pre-empt showings, check other bouquet channels - such as 3 - if not on 4.) In the event of schedule changes (*), SPACE Pacific attempts to pre-announce which show(s) will appear. Peter Escher's (June 2001) visit to Sri Lanka and Sir Arthur C. Clarke scheduled for play on Mediasat is currently in "editing production." Sponsorship of SPACE Pacific Report. In general answer to queries - Av-Comm, Satech and Sciteq have contributed corporate funding to make possible the production of the first set of nine SPACE Pacific Report programmes. IKUSI ANZ contributed funds for completion of 9910. If interested in sponsoring future shows, contact Bob Cooper at skyking@clear.net.nz (64-9-406-0651).

* - Note: Mediasat Sunday feed loads have increased and the first showing (0200UTC) may be "bumped" to accommodate other clients. The 0700UTC feed typically is not bumped and would be the better choice if taping for later review.

WITH THE OBSERVERS

AT PRESS DEADLINE

We hope to see many of our readers during the South Pacific Region Satellite & Cable Show September 27-28-29 in Melbourne's Box Hill TAFE facility!

InSat 2E/83E: "Jaya TV testing 3615Vt, Sr3.255, 3/4 FTA" (**D. Leach**, NSW).

Optus B3/160E: "Zee link channels have changed, reflecting the recent addition of Sony Entertainment Television in mid-August. Zee's package now includes ZeeLink 1 - family entertainment, Zeelink 2 - cinema, Zeelink 3 - Indipop and Bollywood music - live news, Zeelink 4 - Sony, Zeelink 5 - Alpha Punjabi and Zeelink 6 - Prakasham Tamil. Contact numbers for all are 133 036 except for Tamil (02-9747-2792): channel numbers are 64 - 69 within Aurora bouquet" (**IF**, Queensland). "Rhythm FM on Aurora radio channel 68 has switched from FTA to CA (Aurora card will not decode) - strange as this is a satellite feed between Sydney and Brisbane for the Gay lesbian life style radio service that is FTA on FM radio in both markets" (**AI**, NSW). "Good to see TV5 Asie and Germany's Deutsche Welle have returned to MediaSat 12.336Vt - will they stay now?" (*Coop's note*: Still no permanent decision. Both disappeared because a storm knocked out the receiving antenna in use by MediaSat from As2. Technically - the '30 day free trial' to encourage full-time use is still in effect.)

Optus B1/156E: "What happened to ABC NT?" (**Paul**, NZ) (Coop's note: Still on 12.258/12.260Vt , Sr 5.0216, 3/4 with VPID 832, APID 833 but power level dropped more than 6 dB when a narrow band data carrier was added to transponder. Hawkes Bay region observer says his 1.2m is not on ragged edge so certainly anything smaller is in trouble.)

Optus C2/152E? Shameless speculation appearing in Australian business press suggests that now Optus control has been assumed by Singapore Tel, that future Australian geostationary orbit slots that would seemingly have gone to Optus as a matter of course could now be acquired by someone else. Who else? One source suggests Foxtel. With C1 scheduled for launch after 1 January, to go to 160E where after testing all existing traffic will switch from B3 to C1, next up will be C2 and eventually C3. Only they might end up being some letter other than "C". Foxtel and junior partner Austar have been complaining loudly about the (1) high rates, and, (2) poor service they have been forced to endure from Optus - something made worse of late by the uncertainty that surrounded the future of Optus between June and late August's approval for Singapore Tel to acquire control. And the Foxtel – Austar protests have led to speculation that as two new orbit slots are being "auctioned off" by the Australian government (hey - whatever they can do to raise money) that perhaps this time around a foreign-owned Optus may not end up with either of them. Foxtel is a logical candidate. They could easily persuade Austar to follow them to a new purpose built satellite to operate from either 152 or 164E and by the time all of this happens the odds that Foxtel and Austar will be a single entity are pretty good anyhow. Then you throw in the NDS

TESTING leads to speculation - is ABC's ATVI headed for PAS-8 C-band? Stay tuned.

Possible dart-board target prototype for use at TVNZ?

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 October 15th issue: October 4 by mail or 5PM NZ October 6th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

(Murdoch - same as 25% owner of Foxtel) 66.3% control of New Zealand's Sky Network and you have yet another reason why Singapore's Optus should not be collecting rent from the pay-TV guys. Sure - brand new launched to orbit spot satellites cost big bucks. But if renting a Ku transponder from Optus costs $5 million a year (it does) and you need 3 for New Zealand and six for Australia, that is 9 x $5 or $45 million a year. Over a ten year period, $450 million. And you can buy and launch a satellite to orbit for around half that these days. So in doing the sums, Foxtel has figured out that perhaps they should be in the satellite business themselves. Especially if Telstra - a big user itself of satellite transponders above and beyond Foxtel - stays in the Foxtel picture. So - C2 or C3? Stay tuned.

Palapa C2M/113E: ABC Australia Triple J and ABC News audio channels have reappeared on 3976Hz, MPEG-2 FTA Sr 2.061, FEC 1/2 - might be indication where ABC's revitalised ATVI will be? "On schedule CNN FTA analogue has shut down 3980Vt advising viewers to go to AsiaSat 3 or PAS-8. They don't mention the need for subscriptions!" (**Paul Lively**, Qld). On-again, off-again Indonesian MUX 3880Hz, SR 28.125 and 3/4 (yes - Euro Bouquet "numbers") "on" at presstime - 3 TV channels including TVRI.

PanAmSat PAS-8/166.5E: "Fox News Channel using 3940Hz Cal Bouquet (Sr 27.690, 7/8) for feeds but main links continue on I701, 3769RHC with some occ. use of PAS-2 Cal Bouquet ch. 3 on 3901Hz" (D. Leach, NSW)

PanAmSat PAS-10/68.5E: "SuperSport 5 for South Africa has joined other programmers on 3863Vt - many changes here since August turn-on of this replacement satellite (**Zambeshi, WA**). Discovery India holdout use of B-MAC has ended on 3785Vt - lots of SA decoders that had been 'hot wired' are now pretty useless!" (**SK Rapish**, Sri Lanka).

Thaicom 2-3/78.5E: "3ABN has replaced TRT International on 3551Hz (Sr 13.330, 3/4)" (**Jenkins**, NT).

Soapbox: "Apparently by increasing carrier to noise ratio with 16 QAM, they have figured out method of significantly increasing the number of programme channels that will fit into a 36 MHz bandwidth transponder. Try 20 channels rather than present 6-8 as announced by Tandberg Television - guess we will all have to install 13m dishes!" (**PJ Booth** UK) "Broadcast Engineering (http://www.broadcastengineering.com.html/HomeSet1.htm) carries analysis of 16QAM and strongly suggest a high percentage of the 3 year and older satellites were not designed for the considerable 'linearity' of the travelling wave tube (TWT) required for 16QAM. In North America, for some design reason, only the Canadian satellites seem to overcome this technical problem. Thus when they throttle back the power such that one needs a 13m dish, it is not just because they are trying to keep smaller dishes out - rather they have to back off power to keep TWT distortion down to a level where 16QAM will still work." (**Jack0**) "Try Unity 5000 Pro receiver from Wegener Communications as detailed at www.wegener.com - it supports standard MPEG-2 QPSK, 8PSK and 16QAM." (**KSJ**, Australia) "The bad news about Austar's finances just keep appearing in our newspaper 'THE AGE' with share prices hovering around 51 cents. How long can these people keep going in the face of such

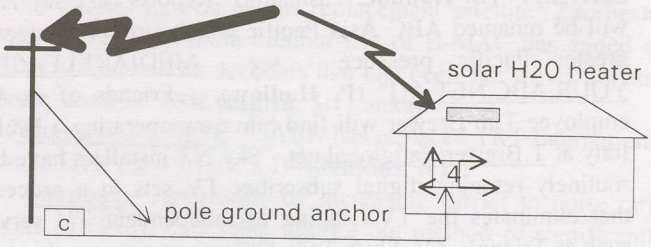
adversity?" (**B. Handoe**, Tasmania) "Reports here say ATVI will be renamed ABC Asia Pacific which strongly suggests a greater Pacific presence - see MEDIARELEASES@YOUR.ABC.NET.AU" (**P. Hadlow**). Friends of ex-ADB employee Tim Brewer will find him now operating a B&B in Italy at T.Brewer@attglobal.net. "Sky NZ installers have been routinely retuning digital subscriber TV sets in a procedure that eliminates the TV's tuning of independent TV services such as Triangle TV. Sky's Tony O'Brien assures me this is not 'policy' and that viewers should insist the installer retain original terrestrial FTA reception by installing a combiner for terrestrial UHF aerial after installing Sky Digibox. Our TV station (Triangle TV) is now running public service announcements urging viewers to insist the Sky installer do just this so that Triangle and other FTA independent TV reception is not lost." (**Jim Blackman**, Auckland) "Suggest those who want Out of Area Reception (Blackspot) to mobile homes, campers that move about Australia contact Stirling Finlay (Stirling.Finlay@aba. gov.au). In response to my query, he wrote, 'You indicated 99% of the time you would be travelling within the Imparja and Central Seven licence areas. No permission from the ABA is required for reception of these commercial satellite services when within these licence areas. However, permission from the ABA for reception of these services when outside of their licence area is required. Such permission is normally applied for under the Out of Area provisions (formerly called Blackspots). The Out of Area reception provisions cater only for fixed installations as no provision is made in the legislation for mobile reception. Under these circumstances, the ABA has indicated to Imparja and Seven Central that they may enable smartcards for viewers that are mobile - but limit the duration so that ongoing use in a fixed location or equipment resale would mitigate use for other than as originally intended.'" (PH, NSW). "Letter I received from Contractor Communications reference closure of TelstraSaturn DTH service, dated 1 August: 'Direct to home Satellite TV (DTH) Residential Installations in New Zealand. It is with regret that we advise you that TelstraSaturn has decided not to go ahead with the above project at this stage. We would like to thank you for your interest in this project, and should circumstances change in the future, we will be in contact with you.' Signature is David Lokes, Manager Contract Communications." (**FN**, New Zealand) ""We handle two DVB-T decoders at this time - both standard definition. UEC's DTT7201 has S-video output, second smartcard support at A$540 while Zinwell ZDT-310 the includes signal level meter and BER counter to assist installation is A$520 - all pricing varies with quantity purchased. Samples of high definition (HDTV) are expected at any time and the Zinwell ZDT-410HD which was (apparently - Coop) designed for USA market decodes 'all 18 SDTV and HDTV formats' and includes COFDM - the Australian format." (**D. Dargie**, Nationwide Antenna Systems 07-3252 2947).

Our SatFACTS Web Site?

Http: (satfacts et al) was shut down 31 July by our USA server. Plans to restart the site exist but have progressed very little since mid-August because of the press of other issues including SPRSCS 2001.

We will advise where and when it returns.

AT Sign-off



Things that go bump in the night

Lightening is a legendary stuff. People are hit while standing under a tree on a golf course and survive to relate their tale. Fifty feet away lightening strikes another tree, rolls across the ground and kills four cows grazing in a pasture dead in their tracks; fried standing up. The largest Big Mac ever created.

One "standard" stroke of lightening reaching ground carries the energy potential of 10 Hiroshima A bombs. Ten. But unlike the A bombs, which have totally predictable results, lightening striking the ground or something anchored to the ground is totally unpredictable.

On Tuesday September 4th at 8.21AM a ferocious thunder storm sent a lightening bolt to earth on a hilltop in Cable Bay, New Zealand. The strike "went to ground" at the top of a concrete 3-phase power pole with a metal guy wire holding it up against prevailing offshore winds. The guy wire was anchored in a metallic auger anchor down 1 metre at the tip. Less than 50m away was a $450,000 house and directly under the concrete pole, less than 1m away, a ground mounted painted green wooden box inside of which was one of our PDX (a brand) 50-550 MHz cable trunk amplifiers.

Inside the home, a couple from Switzerland who had bought the home only a few months prior. Their pride and joy was the fourth bedroom they turned into an exercise room - completing the transition two days prior - complete with weight machines, cycles, and a spa tub. We had added a cable TV outlet (the fourth for the home) in that room.

We know the lightening hit first at the top of the power pole - several kilo-plus chunks of concrete scattered around the base of the pole, freshly carved from the top of the pole, suggest that scenario. How it got from the top of the pole to their home is less well understood. But 500 airline metres away a ham radio operator with a 15m mast loaded with an array of copper wires was astounded at 8.21AM to see a fireball roll down his wooden masts following his transmission line and then literally jump across the sidewalk and through the front door of the house. Inside his home several appliances went "bang." His wife fainted. He dialled "111".

Meanwhile at the Swiss couple's home their own fireball was significantly larger. A copper pipe constructed solar water heater on the roof took a direct hit, fusing the pipes into solid rods. The strike left a hole the size of a VW bug in the wooden roof. Then all hell broke loose. Every single electrical wire line in the house fried. Most popped out of the walls where they had been installed - you could see this because they got so hot that burn marks traced the electrical cable runs down walls, across the ceiling, even through the concrete floor and the carpets. The lightening left a complete "road map" of the entire house electrical wiring painted on walls and ceilings and floors. And the fun was just beginning.

The man of the house had 30 seconds before the horrendous deafening crash stepped out of the shower. His wife had walked to the kitchen to get him a cup of morning coffee. She estimates her hand had let go of the metal kitchen faucet not more than 10 seconds before the "boom."

The lightening ran amuck in the house "looking for a decent ground". While racing through wires and leaving scorch marks on walls, it set some wall studs on fire and blew holes that varied from fist size to VW bug size in 14 of the 18 wall surfaces in the home. The bathroom shower which he had stepped out of 30 seconds prior exploded. So did the entire floor of the bathroom. The pipes under the concrete turned into a miniature bomb, as if dynamite had been planted there. The moulded plastic shower stall was sent like a rocket into the ceiling where it compressed from its original 2.2m height to under a metre. It stuck there quivering like an arrow in a target.

The kitchen faucet she had let go of disappeared. Just went away. No pieces could be found of it nor the metallic sink it was mounted on. Just a large gaping, jagged hole in the top-end market luxury kitchen counter top.

100m away a lady had just dropped her cell phone into a charger. The "boom" noise and the resulting surge of electricity through wires in the community drove her cell phone into the air like a bullet while the charger melted down to a pile of unrecognisable rubble.

More than a kilometre away a cable TV subscriber had misplaced his remote control and had walked to the TV set to push the channel change button on the set-top box. As he touched the plastic button a fireball flew out of the set-top box turning it into cinders. The flash was so blinding he did not regain vision in one eye for 30 minutes.

Ten Hiroshima bombs.

The hilltop house is shambles. The people left for Auckland because they could no longer live there. The cable trunk amplifier under the pole? Well, see page 20 here. For the next 72 hours emergency telephone, power and cable TV crews battled layer after layer of faults. Unfortunately for us, the "cable TV crew" consisted of this writer and trusted helper John Taylor. The telephone company rolled in more than a dozen trucks and guys.

Eric Fien wrote us, "*Don't you have both in-line and outdoor lightening arrestors installed?*" Russell Futter suggested, "*Nothing compares with the lightening that occurs in portions of South Africa.*" I will never go there.

Ten Hiroshima bombs. More than 6 km of cable TV plant was knocked out, another 4 km lost service because it was after and out of the strike area but depended upon that region for its feed-through signals. 96 hours after the strike hit, John Taylor and I had replaced 129 pieces of cable equipment including ten cable set-top converters. We were the luckiest guys on the face of the earth because we did not run out of spares in any category (see page 20). But consumers who lost TVs, VCRs (especially common - raising questions about their power supplies), water pumps, cell phone chargers, microwaves and a hundred and 1 other gadgets will long remember the event. 8.21AM, September 4th.

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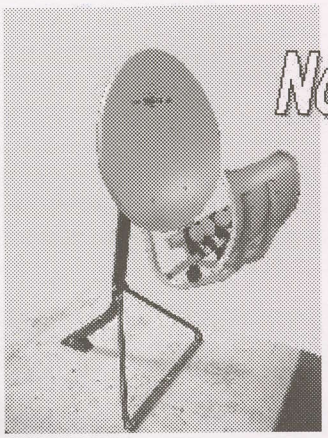

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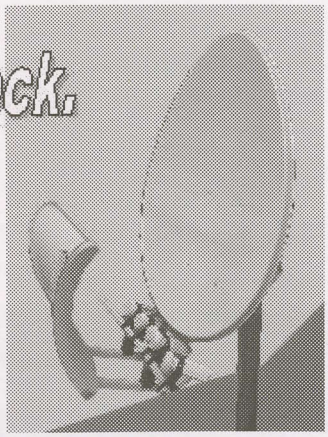

Model		TOROIDAL55	TOROIDAL90
Main Reflector	Height	53.2 cm	96.7 cm
	Width	66.8 cm	108.6 cm
Sub Reflector	Height	25.3 cm	36.1 cm
	Width	49.7 cm	83.6 cm
Reception Frequency		10.70 - 12.75 GHz	10.70 - 12.75 GHz
Antenna Gain (At 12.5GHz)		35.95 dB (at 0 deg. Azimuth)	40.10 dB (at 0 deg. Azimuth)
		35.40 dB (at 20 deg. Azimuth)	39.20 dB (at 20 deg. Azimuth)
Azimuth (at Tilt 0 deg)		+/- 30 deg (total 60 deg)	+/- 25 deg (total 50 deg)
LNB Installation		2 ~ 5 pcs	2 ~ 5 pcs
Efficiency		70 ~ 82%	65 ~ 80%
Polarization		Linear & Circular	Linear & Circular
Material		Galvanized Steel	Galvanized Steel
Finish Coating		Polyester powder coating	Polyester powder coating
Color		White gray, Dark gray	White gray
Operating Temperature		-30 deg ~ +60 deg	-30 deg ~ +60 deg
Relative Humidity		0% ~ 90%	0% ~ 90%
Damage Winds		65 m/sec	65 m/sec
Operating Winds		50 m/sec	45 m/sec

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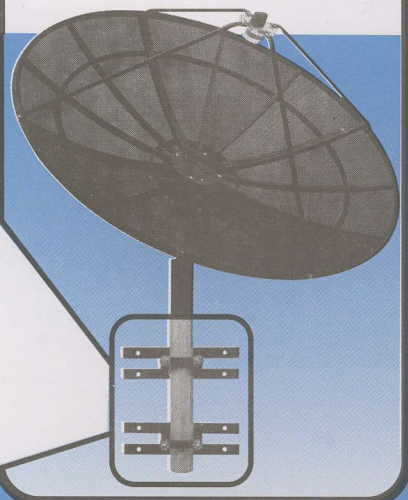

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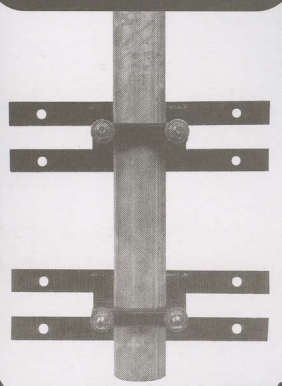

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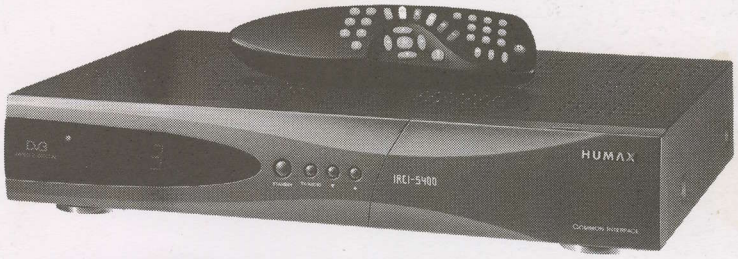

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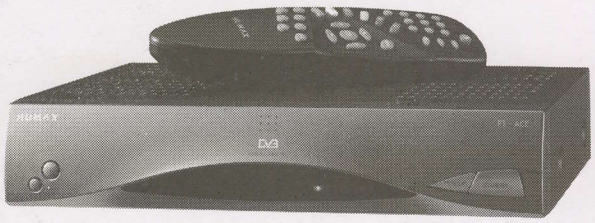

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