Television

NEWSLETTER

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Digital Television, Past, Present and Future

by
Michael McEwen, President
Canadian Digital Television (CDTV)

This past year has been one of new initiatives; predictions about DTV take up (both positive and negative), debate about transmission standards, and some industry confusion. All in all, "situation normal" for the introduction of a new technology. While most of the action has been in the US, Canada has been quietly getting its act together through the efforts of the members of CDTV.

In fact, we now have a test transmitter located in Manotick, just outside of Ottawa. CDTV members contributed equipment and "in kind" services for this crucial initiative. Industry Canada awarded a contract to the Communications Research Center (CRC) to test the over the air allotment plan. Under the guidance of the CDTV Technology Working Group, testing including: picture quality evaluations, data transmission and other similar activities will provide the industry with some hands on experience and understanding of the potential that DTV can provide.

The CDTV Marketing Group has prepared a pamphlet to aid consumers and retailers in understanding what DTV/ HDTV is, and what they should consider when buying a new television. The Television Manufacturing community had serious concerns about the potential for incorrect and misleading positioning statements that could confuse merchants and consumers. However, as a group they arrived at a consensus about the information in the pamphlet, which will be making its way to the marketplace over the next few weeks.

CDTV's website www.cdtv.ca, which includes the pamphlet material, also includes up to date material on DTV implementation in Canada, the US and around the world.

Sub-committees of CDTV are involved in researching potential economic models for DTV transition, including digital replacement of obsolete analogue equipment, data applications (both program and non program associated data), wide screen SDTV and HDTV production, as well as multi- casting. More work will be done in these critical areas in the year ahead, as many broadcasters are searching for the right business case to make the transition and have yet to find the right model. Presentations to industry related groups and educational seminars have also been very much a part of CDTV activities over the past year. A great deal of our time has been spent in organizing Working Groups and defining the many tasks

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FCC Denies Sinclair´s Request to Modify Digital TV Standard

By a 5-0 vote, the Federal Communications Commission decided on Friday to deny a petition from the Sinclair Broadcast Group asking the commission to modify the nation's digital television standard.

Sinclair, which is based in Baltimore and owns or operates 59 television stations, more than any other company, began complaining last summer that the digital standard, which was adopted by the government in 1997, included transmission technology that did not work very well.

In a series of tests, Sinclair showed that the digital television receivers that are now on the market are often incapable of receiving an acceptable television picture if the receiving antenna is not within a direct line of sight of the transmitting antenna. Sinclair, joined by 250 other television stations, filed a petition in October asking the FCC to revise the standard so that stations could choose to use a transmission technology that is being used in Europe and that had shown in tests by Sinclair that it worked better in many circumstances.

Hundreds of additional stations later joined the petition or at least expressed support for parts of Sinclair's goals. Sinclair and the other stations had hoped the commission would put the petition out for comment, allowing a broad industry debate. But a spontaneous industry debate took place on its own, and most mainstream broadcasting and consumer electronics groups said they opposed Sinclair's request. Finally, on Friday, the commission denied Sinclair's request. In a letter to Sinclair, the commission said numerous studies had shown that the current transmission standard was adequate. "We do not find that Sinclair has presented any valid technical information to refute" those studies, the letter said. The commission also said that shortcomings found in the first-generation digital receivers now being sold would probably be remedied in future products. In response to the FCC decision, Sinclair said only, "We have not yet seen the actual language of the order and will refrain from making a detailed statement until we have had an opportunity to review it."

Visit CDTV's website for FCC Press Release and letter. +

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associated with a new broadcast technology. In the coming year, work in the Production, Training, Policy, Regulation, Economic and Marketing areas will dominate our agenda.

Government has recognized and endorsed CDTV as an industry initiative to guide the orderly migration from analog to digital services. Industry Canada has provided spectrum and an allotment plan for Broadcasters to begin DTV transmissions.

Canada made a strategic decision to fast follow the U.S. digital roll out by 18 to 24 months. CDTV has and continues to spend a great deal of time and effort monitoring the U.S. roll out. However, there is a difference between a digital roll out and being digitally operational. At the end of December, some 100 U.S. stations were on the air in the Top 30 markets. DTV "ready" television set sales have met the initial projections of 120 thousand in 1999. This is projected to grow to 10 million by 2006 and then continue at 10 million a year thereafter.

Is the US digitally operational? Arguably not; set penetration is years from critical mass, and HDTV presentations, while growing to almost 100 hours a week from all sources, is yet to become ubiquitous. But the FCC mandated transition process is forcing the pace. And over the next year one could predict that they would be operationally viable. With the Canadian " fast follow " philosophy, we should be able to offer operational DTV services within a couple of years.

It is apparent that US transition to DTV has its share of controversy. A debate has broken out over whether the chosen American transmission standard *ATSC (A53)* or, *8 VSB* was the right choice. The Europeans have selected *DVB-T (COFDM)* as their standard. The proponents of each standard are slugging it out, and to be fair, there are merits to both viewpoints. The *ATSC* standard was developed for stationary viewing and HDTV, while the *DVB-T* standard was developed for mobile services as well as stationary services. While *DVB-T* can be tweaked to deliver HDTV it was not developed with that service in mind.

Note the FCC ruled on February 4th against a petition to modify the U.S. ATSC standard. (refer to page one of this newsletter).

Regardless, whatever the US decides to go with, so will we in Canada. Given the Television marketplace in North America we cannot afford to support a different transmission standard than the Americans. One positive note should be made, Canada's fast follow strategy has resulted in no transmission investments as of this date, and we can afford to wait and see if the issue is finally over with the FCC ruling.

The whole area of program and non program associated data delivery is currently being researched and developed by U.S. and European broadcasters and software companies as not only value added services to viewers, but potential additional revenue streams for broadcasters. While over the air delivery of these services have the promise of exciting new ventures, issues concerning BDU carriage of the services become increasingly important. Cable, DTH, and MMDS are all important to this transition. Digital capacity to carry "over the air" and "pay" and "specialty" that provides both HDTV and additional data will be crucial to a successful transition.

The year 2000 will see many of these issues resolved. Others will continue to be disputed, debated, researched and test-modeled. This being said, it is inevitable that the future of our industry is digital. The quality, flexibility, economy and opportunity that digital delivery provides ensures that consumers will demand it, and service providers will find the right business case to realize it.+

DTV or Not DTV

Canada's first operating DTV license was applied for by Craig Broadcasting as part of an application for an analogue television station in Victoria. Craig Broadcasting received spectrum allotments from Industry Canada for both analogue and digital transmissions. However, when the CRTC announced the agenda and dates for the public hearings in February, they noted that they were **"not in a position to consider issues relating to Digital Television Broadcasting at this time, consequently the Commission will not consider this aspect of the application at the hearing (CRTC 1999-13)".**

Craig Broadcasting, and CDTV members were surprised at this position since the industry assumption was that when the market was ready and spectrum available, licensing would not be an issue.

Industry Canada provided the necessary spectrum, digital televisions are available and yet when a broadcaster made an application to service a market it was not heard.

CDTV met with the Commission staff in January and learned that the Commission did not have a policy framework in place upon which they could base their decisions concerning DTV applications. Commission staff will be briefing Commissioners in March and it is hoped that a process to put the necessary framework in place will be the result. CDTV has invited Commission staff to participate on all the relevant Working Groups and they have accepted. +

Monitoring the US DTV Transition

The American transition plan is very aggressive. Beginning November of 1998 the top ten markets had to be on air by May of 1999 (networks only; CBS, ABC, NBC and FOX with PBS being given some flexibility) and by the end of 1999 the top thirty markets must be on the air. By the end of 2003 all TV license holders must be broadcasting in Digital and there is a planned analogue shutdown at the end of 2006. Many have suggested that this transition plan is unrealistic and too aggressive and will have to be modified. But in the meantime those are the rules and we will measure their progress regularly. A number of indicators will provide a handy guide for measuring progress.

Number of Stations on Air: As of January 31st a total of 117 stations were on the air in 44 markets. This figure is slightly short of the 120 target in the Top 30 markets but may be explained by equipment shortage and lack of trained tower and installation crews.

Number of Licenses applied for and Granted: Some 1342 applications have been made for DTV licenses to the FCC, 287 licenses have been granted. There are a little more than 1600 licensed television stations in the US.

Population Covered by a DTV Signal: Currently a little more than 50% of the US population is within the coverage area of a DTV signal.

DTV Sets Sold to Date: As of end of December 1999 a 121,226 sets were sold for the calendar year. Since DTV start up in late 1998 a total of 134,402 DTV ready sets have been sold. This meets the CEA projection for 1999. For the year 2000 CEA is predicting 600,000 DTV ready sets will be sold. Most of these sets are HDTV capable, but many are display units and may need a set top box to bring the DTV signal to the screen. Figures on set top box sales are elusive since standards are still being worked out.

Availability of HDTV Programming: When DTV launched in November of 1998 there was little HDTV programming available. Last Fall the networks all announced major HDTV events. It is recognized that in order to fulfill consumer expectations the amount of HDTV programming must increase.

DTH HDTV Services: This past fall HBO an HDTV channel delivered by Direct TV. A second channel will be launched later this year. EchoStar is in the process of discussing HDTV carriage with a number of programmers but has yet to announce their HDTV plans.

Cable Services: Cable companies are converting to digital delivery but the programming they deliver for the most part is digitally compressed analogue services that are delivered to the home and converted back to their original analogue form. This is a necessary first step to provide the delivery platform on cable for DTV, whether it is Standard or High Definition resolution. In addition Cable is working on a set top box capable of decoding digital signals including all HDTV formats with CD sound. The first of these boxes should be available July 2000.

In a toughly worded address at the CES in Las Vegas last month, FCC Chairman William Kennard served notice to the manufacturers, cable companies and content providers that the issues of copy protection and equipment compatibility must be resolved by this April or the FCC will issue proposed rules for digital TV compatibility standards in order to meet the July 2000 date set by the FCC for set top boxes to be available for the consumer market.

Two new players are entering the cable HDTV arena: Discovery and Showtime. Discovery is planning a 100 hours of HDTV programming this year and Showtime is expected to offer the majority of its prime time line up in HD this first quarter of 2000.

Impact to Canada from the US transition: Canada's strategy for DTV has always been a fast follow strategy to the American roll out. This anticipates a lag of about 18 months to two years behind the US. It is perhaps useful to define when the American roll out is real. Certainly it is not November of 1998, but the roll out probably can best be defined as to when DTV is operational in the US. Given the current momentum; the number of stations on the air, the availability of HDTV programming and the development of value added services, the US probably can be considered operational by this Fall. Which means Canada should plan to be operational in key markets by late 2001 or spring 2002.

To date there has been no transmission expenditures by broadcasters in Canada.

However, there has been careful monitoring of the US roll out by broadcasters and distributors, resulting in plans to upgrade production facilities and master controls as part of the long term transition to DTV distribution whether over the air, cable, DTH, or MMDS. The Canadian strategy anticipates beginning the transition when the economics are right for the industry and the value is there for the consumers.+

DTV at Y2K CES

By: ***Lou Montana, CDTV***
Note: ***All $ figures in U.S. funds***
Note: ***Scheduled availability for US market only***

North American Consumer Electronics sales show no signs of slowing down. There were over 2000 exhibitors at this year's convention in Las Vegas. The CEA (Consumer Electronics Association, formerly CEMA) reported that factory sales last year exceeded $80 billion, a 6% increase over 1998. Almost half of the gain was attributed to video products, largely made up of large screen projection sets and DVD. What does that tell you? …. Consumers want a better viewing experience, and DTV and HDTV will lead the next wave.

CEA reports that after 15 months, total "sales- to-dealers" of digital TV capable sets to the end of 1999 will be 120,000 units, forecasting 600,000 units for year 2000, leading to 10.8 million in 2006. In addition, by the end of 1999, there were more than 100 DTV stations on the air reaching over 50% of the U.S. population. Add to that, the *entire* population of the US has access to HDTV signals from Direct-TV and EchoStar's "Dish Network".

So, it is no wonder that there was an air of optimism at the Show that DTV was here to stay. Albeit, with some hurdles still in front of it.

CEA went to great lengths to put DTV at the forefront. Program guides were available to help find DTV products, a large information kiosk was in the lobby of the convention center, and a live HD production, from a studio in the lobby, was distributed throughout the show floor. A digital cable head-end system was installed to feed the show floor with over five different HD streams so manufacturers would have access to HD programming at their booths. On Saturday, the NFC wild card game, produced by ABC with the Panasonic 720p production truck, was received live from satellite, re-encoded and fed live through the hall.

Over 15 manufacturers were showing DTV receiver hardware. These "receivers" came in two forms: as DTV "sets", with integrated receivers/decoder, and as display only devices that require outboard receiver/decoders. A variety of sizes and flavors could be seen: 30" to 38" Direct View; 42" to 65" rear projection, using either CRT, LCD or "SLM" technology (spatial light modulation); and lastly 42" plasma. Almost all were 16:9. Native resolutions tended to be 1080i although some manufacturers like Panasonic showed both 720p and 1080i. Sony did announce that they would be introducing a complete line of 1080i sets this year, in both 4:3 and 16:9 formats.

Most of the plasma displays were only 1280 x 768, while the Fitjitsu was the only 1024 x 1024. All the others depend on internal scalers to down-convert a 1080I image to 720P.

New at this show were rear projection displays using *spatial light modulation* techniques. Texas Instruments, the inventor of the DLP technology, was showing a prototype 52" set at 1280 x 720. Apparently, Hitachi and Mitsubishi will also use this technology. Product is due Q3 2000.

Some manufacturers were introducing direct-view CRT based displays. Industry pundits suggest that this is where manufacturers need to offer more product. Although, the projection sets are appealing to early adopters, it is felt that what will be needed is smaller 16:9 Direct View CRT, in the 32" range, preferably with a flat screen.

At least a dozen manufacturers were showing set top boxes. These outboard receiver/ decoders could decode all of the ATSC formats but most would convert to 1080I. Outboard receiver/decoders are in the $1000 to $3500 range. Some included NTSC tuners with a line doubler and many had Direct TV receivers as well. Most interface to the display via component analogue video (Y Pr, Pb, or RGB). (The industry has not settled on copy protection so boxes with IEEE 1394 interface were not readily evident. More on copy protection later.)

A highlight for me were the prototype HD DVD players. If consumers could purchase HD content, it would help to drive the sale of HD sets thus creating a base of HD receivers for when the Canadian broadcasters finally begin to broadcast a digital signal. Pioneer and Zenith's parent company LG Electronics had units on the floor. The LG rep predicted it was two years away at a price of somewhere around $2500. It requires industry standardization as well as development of copy protection acceptable to Hollywood. The LG machine had 2-hour capacity. The Pioneer unit with a 27.4 G Byte disc is capable of 4 hours at 18 mbps at 1920 x 1080I.

JVC showed a digital VHS machine capable of recording HD material. This machine is apparently available in Europe and Japan for about $3000. It has every kind of input including 1394. It had a built in MPEG encoder and offer two quality levels of recording; 14.1 Mbps and 28.8 Mbps with 5 and 2.5 hour playing time respectively. Tape stock, depending on length, is $10 to $15.

Visitors to this show will be preaching the gospel of HDTV and will now be looking for product. They might not buy just yet but it seems that the industry is hearing that more and more consumers want high quality images and sound. This can only lead to more affordable product and more buying. +

Lou Montana has written a comprehensive review of CES, which can be found on our website at www.cdtv.ca. The review includes information on receivers and decoders, direct to home, interoperability, modulation, copy-protection, in addition to specific model and feature content.

HDTV Status

by: Terry Snazel, VP, Technology
General Manager, Broadcasting and PPV
Bell Express Vu

Although there is much work to do, and many decisions to make, Bell ExpressVu's plans and strategy for the HDTV roll-out are firming up, as the following indicates. Most importantly, Bell ExpressVu is convinced that consumers will only buy HDTV televisions when there is HDTV programming fully integrated with a multi-channel MPEG based Digital System.

1) Bell Express Vu has been a Beta site for DiviCom HDTV encoding equipment for some time now and has set-up a small installation at our Broadcast Center in Toronto

2) On October 22nd 1999 we carried out Canada's first satellite HDTV Broadcast to consumer receiver equipment defined as:
   - Canadian Satellite
   - Canadian HDTV Play Back Facility with Canadian Programming

3) Integrating HDTV broadcasts into our regular SDTV program offerings has proven to be technically simple and has been done on an ad-hoc basis since October 22nd. Actual roll-out schedule and volume of transmissions is not yet determined.

4) Bell ExpressVu is now convinced that the appropriate technology for HDTV roll-out in Canada is DBS satellite based, perhaps supplemented by a few terrestrial transmitters and digital cable carriage. This is based upon the geographic reality of our Country, and the economics of HDTV distribution in Canada

5) Bell ExpressVu's plan is to roll-out HDTV channels as part of its DBS service which will include HDTV, Super Definition and digital NTSC. Super Definition is non-NTSC, end-to-end component 1080i and is currently used as the standard format for Bell ExpressVu's "Vu!" service and some Broadcast Networks.

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6) We will carry live HDTV signals in the format appropriate to the source i.e. 1080I or 720P depending on the originating U.S. Network. For our own programming, distributed as part of our PPV Service "Vu!", we have used 1080I, however, some preliminary tests with 720P showed bandwidth economies for a given picture quality. It is quite likely that we will use Progressive Scan formats for our own program production, post production and delivery to customers, although we have some testing and picture evaluation to carry out. My expectation is that we will again choose the format appropriate to the source and production operations needed.

7) Bell Express Vu fully endorses the ATSC standard and we are participating in the T-3 working group DTH satellite sub-committee. +

HDTV Live Demos at Conference

The Canadian Satellite Users Association will be holding its Annual Conference on March 22 and 23 in Toronto. Sessions at the Conference will explore the threats and opportunities presented to broadcasters by the continent-wide coverage of the new generation of satellites. There will also be a session on New Media where panelists will discuss the lessons broadcasters can learn from the explosion of new media applications.

A highlight of the Conference will be several HDTV events. Michael McEwen will moderate a session with USA broadcast executives who are the midst of deploying HDTV. This session will be followed by a live demonstration of HDTV satellite feeds displayed on HDTV receivers. A part of the dinner entertainment will be a HDTV movie projected by state of the art theatrical equipment. The Conference provides an excellent opportunity for the exchange of HDTV information. +

Canada's First HDTV Broadcast of a Major Sporting Event

On Sunday February 6th Bell ExpressVu carried the All Star NHL game in HDTV on their regular satellite DBS service. This Broadcast was part of the All-Star weekend celebration at the Air Canada Centre in Toronto and their satellite signal was shown throughout the arena on HDTV television provided by Sony of Canada. ExpressVu also down-converted the HDTV signal to "Super Definition" so that their subscribers could experience 16 x 9 pictures with an end to end component luminance signal (called Super Definition by ExpressVu).

This event was produced for ABC by the Panasonic HDTV production mobile in the 720 P format. Bell ExpressVu sourced the HDTV signals in Boston, as - transmitted by their Eastern Time Zone ABC affiliate, WCVB. The ATSC signal at 19 Mbs was received off-air from the digital transmitter, inserted into ExpressVu's Boston Multiplex and carried to the Toronto satellite uplink, by fibre. They completed full a HDTV weekend, by intermixing the live 720P signals from Boston with videotaped programming in 1080I, played back through their "HDTV Master Control" (small but mighty, certainly Canada's only).

More information can be found on CDTV's website or visit Bell ExpressVu at www.expressvu.com.+

DTV: HANDS ON

by
Carol Darling, Chair CDTV Technical Working Group
with contributions from Bernard Caron, and Metin Akgun CRC

I think we have been very wise in Canada, by monitoring the successes – and challenges of rollout in the United States, before we leap into high end DTV broadcast and delivery. There are still a few things we need to learn. The CDTV Technical Working Group is starting the new year tackling two important projects: i) The CDTV Test Transmitter Project, and, ii) A Picture Quality Demonstration.

Test Transmitter Project

Canada's first DTV over-the-air transmitter is now up and running in Ottawa. This implementation is very timely given the recent concerns expressed by some parties in the United States related to DTV receiver performance using the ATSC transmission standard. Canada, ensuring that we are in step in North America, has officially adopted the ATSC standard for implementation. So, the aim of this CDTV project, (in collaboration with Industry Canada and the C.R.C. is to verify the technical assumptions used in Canada's channel allocation plan for over the air DTV. In addition, it gives us the opportunity to assess real world reception performance issues in advance of commercial implementation in Canada, and draw our own first hand conclusions.

The test plan includes obtaining measurements using both indoor and outdoor antennas in urban and rural locations. Up to 200 test receiver locations are planned for over the next few months. We will be seeking to determine if the coverage achieved for DTV using the *ATSC 8-VSB* ("Vestigial Side-Band") modulation approach, is at least as good as coverage achieved for current NTSC analogue signals. The tests are designed to tackle some of the more difficult real world receiving and signal interference conditions. Preliminary results from the field tests should be available in late spring.

Picture Quality Demonstration

The CDTV Technical Working Group is assembling a working system for evaluation and educational purposes. All of us in the Canadian television system will have to make many decisions related to acquisition formats and distribution approaches for our Canadian services. It is our aim to learn more about these choices and their implications using this demonstration system. Details for the demo are currently being worked out with many kind offers of equipment loan from suppliers. If you happen to have some programming produced in 720P format – or some spare HDTV broadcast equipment sitting around – Please call! Our objective is to have our demo underway in late spring.

CRC laboratory tests:

In preparation for the field test, CRC has conducted laboratory tests on a number of receivers. The objective of these tests was to assess how different *ATSC 8-VSB* receivers performed when subjected to some tough conditions. It was interesting to discover that a wide variation in reception performance was achieved. (It's so hard to tell when looking at that DVD demo in the electronics store!)

One of the conditions of concern occurs when a receiver in a fixed location has to deal with "random noise". (Random noise can result from the internal electrical or thermal processes which are required to make the receiver work.) In addition to the random noise test, when a signal is received which has been bounced off various surfaces (e.g. tall buildings or mountains), it challenges the receiver to deal with the same signal arriving via different routes at slightly offset times ("multi-path" interference). How various receivers cancel the "ghosts" which result from this is an important performance issue.

Five receivers (using first generation 8-VSB chips) were evaluated. Among them, two were readily available in the U.S. marketplace, two were prototype (consumer models) and the last one a professional model.

Under all conditions, a significant difference was realized between the worst and best performing receivers. These differences would have a significant impact on the results obtained in a field trial. Hence, care is being taken to characterize and select receivers for field-testing, so that the system itself is assessed – not some of the poorer performing first generation receivers.

In addition to these initial tests, CRC is currently testing how well the receivers perform when subjected to fast changing (dynamic) ghosts. This dynamic multi-path interference can occur in indoor reception when people move around the room and change the antenna receiving conditions.

Manufacturers have announced improvements for the new receivers (second generation) coming on the market just now. In addition, a number of integrated circuit (IC) manufacturers, including Broadcom, Motorola, Oren and NxtWave, have announced design improvements in the VLSI chips, which will address the multi-path issue. CRC has made arrangements with some manufacturers to get some of the new receiver equipment on loan for laboratory evaluation and field test. Results should be available soon to determine whether or not these improvements are significant, particularly for indoor reception.+

CDTV'S TEST TRANSMITTER PROJECT NOW UNDERWAY

by W.A. Stacey, P.Eng.
Chair, CDTV Test Transmitter Project

DTV signals from Canada's first high-power over-the-air transmitter are now radiating far and wide within the National Capital Region. These transmissions will play a key part in CDTV Inc's first major research effort – to verify the technical criteria used in the development of Canada's national DTV Channel Allotment Plan.

To paraphrase Winston Churchill, this milestone marks "not the beginning of the end, but perhaps the end of the beginning", as far as the overall testing project is concerned. Now that actual DTV signals are available for evaluation, the assessment phase of the project can begin. To this end, the Technical Working Group has approved in principle a test plan developed by the Communications Research Centre (CRC). The objectives of the test plan are to verify, through field tests, that DTV coverage can be at least equal to that of NTSC analogue TV. During this process, both rural and urban locations will be assessed, using a wide variety of reception facilities, including outdoor and simple indoor antennas. In particular, it is necessary to verify and compare the coverage for analog and digital television at the fringes of the nominal service area, as well as in difficult receiving conditions (e.g. indoor, rough and hilly terrain, etc).

This high-power over-the-air transmitter will also be useful for assessing a number of related cable carriage issues. For example, local cable companies will be able to receive DTV transmissions directly at their local head ends and experiment with either direct carriage of 8-VSB HDTV signals or their transcoding to other modulation forms that may better suit distribution via cable.

The CDTV test transmitter installation is very similar to permanent DTV facilities that have been constructed in most major TV markets in the US. It is authorized to operate with a substantial average effective radiated power (ERP) of 32.7 kW and an antenna height (EHAAT) of 215m. It provides omnidirectional coverage on Channel 67 that is intended to duplicate the Grade B service area achieved by its host analogue TV station, CITY-TV-3 Channel 65. The new facility will be receivable over a radius of about 70km, which includes the Ottawa-Hull CMA and stretches south to the Seaway Valley, west to Perth and east to Alexandria.

Attention now turns to the testing process itself. The current study plan calls only for assessing performance using the ATSC 8-VSB DTV system , which has been adopted as the sole standard for over-the-air DTV in both Canada and the USA. However, there has been considerable controversy recently about the performance capabilities of the 8-VSB system. In view of this, the Technical Working Group has left the door open to using the Ottawa transmitter facility for assessment of other systems, should this be deemed appropriate by CDTV. +

Front view of the transmitter with the 8-VSB modulator in the middle

Measurement equipment installed at the Manotick site, transmitter in background

Photos courtesy of CRC

Drop by the CDTV website for more interesting DTV info and the latest technical developments.

Be sure to read the article by Bernard Caron of CRC on the Performance of Digital Receivers and Lou Montana's comprehensive report of the CES 2000 Show in Vegas. Find the answers to the most Frequently Asked Questions about CDTV's Test Transmitter Site and the most recent decisions regarding the Sinclair debate and much more.

Visit our site at
www.cdtv.ca
Canadian Digital Television, YOUR SOURCE for the latest information.

DTV Tour' 99:

Miranda organized a series of two-day interactive seminars for engineers and technical business professionals in Calgary, Toronto, and Montreal. The objective of this tour was to promote education and information about digital television for the industry and the consumer. Top industry leading company speakers were presenting technology reviews, including: Steve Lyman (Dolby Laboratories), Francois Conway (CBC Corporate Engineering), Michael McEwen (CDTV), Graham Jones (Harris Corporation), Michel Proulx (Miranda Technologies). The sold out tour was a success! Congratulations to the whole team!

For further information, please visit www.miranda.com

Television

CDTV Membership

If you know of a company that would benefit from its association with (CDTV) Canadian Digital Television, please phone, fax or e-mail us the coordinates and we will send them a membership information package or ask them to visit our website Membership section at www.cdtv.ca.

Consumer/Retailer DTV Pamphlets available in both French and English

A useful and informative tool - a must for all CDTV members. If you have not received a copy, please give us a call at (613) 232-8426. Copies are limited! Get yours today!

Feedback ...

"I received the pamphlets and have distributed them and have had positive reactions."

Rene Villeneuve
National Film Board

"I found the pamphlets informative and distributed them to our front line staff so that they would be better informed on developments that relate to consumer HDTV equipment."

Ralph Von Eppinghoven
Look Communications

CDTV Meetings & Events

CDTV Policy & Regulatory WG Meeting
Feb. 16 in Montreal

CDTV Economic & Marketing WG Meeting
February 29th (location to be confirmed)

CDTV Technical WG Meeting
March 8 in Toronto

Industry Events

NABA Broadcasting Forum and Annual General Meeting - Orlando, Florida, February 23-25, 2000

CSUA Satellite Without Borders Conference
March 22-23, 2000 in Toronto
website: www.satgames.org

CCTA Convention
April 2-4, 2000 in Toronto

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If you have anything you would like to contribute to our next newsletter, please send it to our offices to the attention of Christine Jack, CDTV, 155 Queen Street, Suite 1204, Ottawa, Ontario K1P 6L1 or by fax to: (613) 232-9599 or e-mail: cjack@cdtv.ca.