

THE LAND MOBILE STAMPEDE

Where Do We Go From Here?

By Raymond J. Carnovale, P. Eng.

Chief Engineer The Ontario Educational Communications Authority

At the present time in Canada, the spectrum from 470-890 MHz is allocated exclusively for UHF television broadcasting use.

In the United States, however, the land mobile interests have succeeded in achieving a "shared" designation for channels 14 to 20, and have absconded with channels 70 to 83.

Now, as reported in *Television Digest* (Volume 16, No. 12), **Land Mobile Wants More UHF:**

"Originally planning to seek use of UHF channels 32 to 69 for expansion by the year 2000, Private Land Mobile Advisory Committee is now thinking of asking for more—channels 23 to 31.

"We analyzed impact of chs. 32-69 plan, found it would affect 151 of nation's 353 operating UHF stations. Adding latest plan, we find total of no less than 242 stations on affected channels.

"Committee justifies its spectrum claims by stating that it expects land mobile transmitters to increase from current 7.8 million to 55 million by 2000. It also seizes on cable, stating: 'This Committee believes that using UHF-TV allocations to meet land mobile requirements is particularly appropriate since the service provided to the public by UHF-TV can be provided just as effectively by wire or cable.' Committee finds support for this in House Communications Subcommittee staff report which questions whether use of TV of 'over one-half of the most valuable portion of the electro-magnetic spectrum . . . is an efficient use of a scarce public resource.' Incidentally, radio astronomers, who now have UHF ch. 37, are understood to be planning to seek ch. 36, too."

To listen to some of the land mobile proponents, one would think that they should have the entire spectrum from D.C. to blue light.

The purpose of this report is to examine the practical impact of the proposed changes in the use of the spectrum from 470-960 MHz. In particular, this report examines the results of a hypothetical sharing of UHF television channels 14-20 and 70 to 83 with the land mobile service.

Assumptions

It was assumed that the land mobile service would share channels 14-20 using the same criteria as instituted by the Federal Communications Commission in the United States (FCC Docket 18261).

In order to determine which channels could be shared in each major population centre, it was necessary to assume certain standards for co-channel and adjacent channel land mobile base station to television station separations. It was decided to use 162 miles as the required spacing for co-channel usage, and 67 miles as the minimum required separations for adjacent channel usage. While such spacings are the most conservative of those examined by the FCC, we feel that they offer the most realistic ground for assessment. Quoting from FCC Docket 18261: ". . . we have accepted the position of the land mobile interests that powers and antenna heights comparable to those now employed in the land mobile services are required if the relief afforded is to be meaningful. Therefore, we have, wherever feasible, made it possible for land mobile stations to employ one kilowatt effective radiated power and antennas 500 feet above average terrain, as urged by the land mobile comments."

Such power levels and heights, in effect, bring about the decision to use 162 miles and 67 miles as the criteria for minimum co-channel and adjacent channel separations. While lower powers are feasible, it is felt that any significant reduction in power or height would make the land mobile base

station function poorly in the environment of an urban area such as Toronto.

With regard to channels 70-83, it is recognized that:

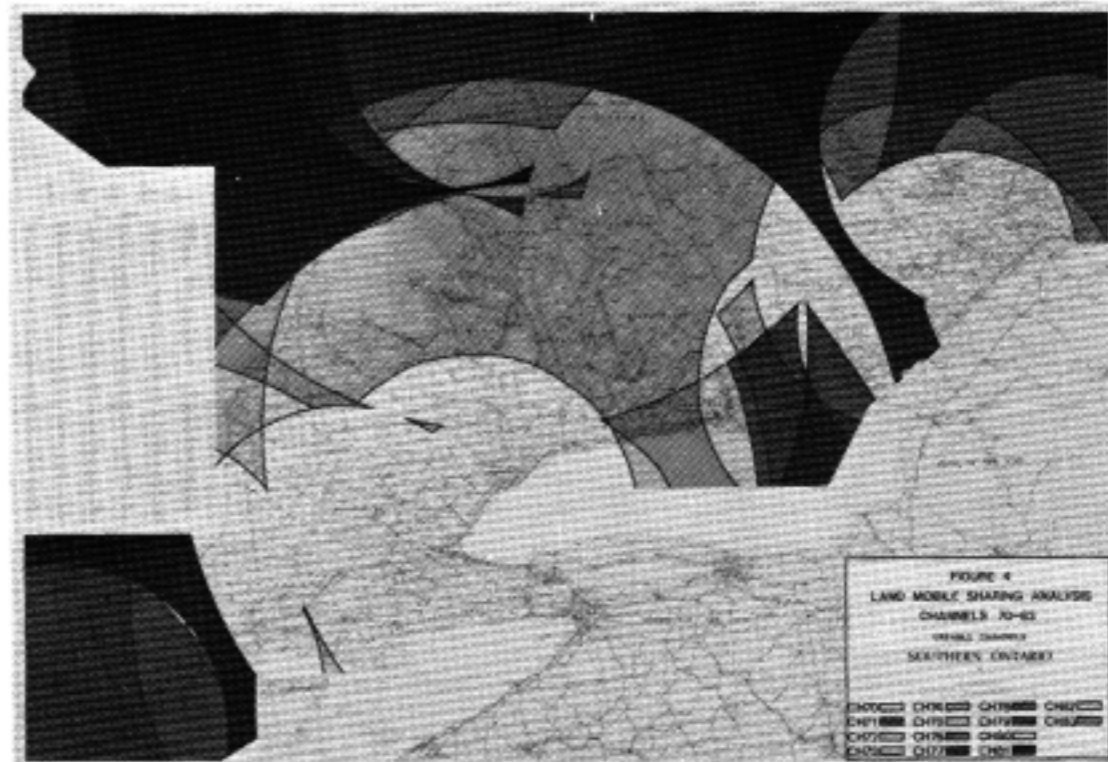
- 1) Canada has not adopted the position of the FCC, in that these channels are still exclusively assigned to television broadcast service.
- 2) There are several "high-end" channels already in operation in Southwestern Ontario and Toronto. In the case of those high-end channels occupied by the CBC, there are no substitutes available if broadcast service is to continue to be provided. The reader may recall that the assignment of these channels followed from extensive negotiations between the FCC and DOC. The negotiations were instituted when it was determined that there were insufficient channels in the Windsor-Toronto corridor to meet the needs of the CBC French network, OECA, and the CTV network. Fortunately, a solution was found which provided spectrum for all the service requirements as they existed at that time. But since there are no other channels available for those urban centres, it is not possible to delete the high-end channels, and shift the broadcast operations elsewhere.

Consequently, our analysis of the high-end channels (70-83) was based on the assumption that the land mobile interests would have to share them with the broadcasters, and would not have total access to them as in the United States.

Analysis

The analysis was performed in two ways.

A UHF channel search program was utilized to determine the distances from the centres of the major urban areas in Southern Ontario from all Canadian and American assignments and allocations. →



Unshaded areas indicate no channel-sharing is feasible.

As U.S. land mobile interests abscond with UHF channels, "the silence of the broadcasting industry in Canada has been appalling."

Continued from page 7

Secondly, a graphical solution was employed to determine the exact service areas where land mobile sharing was feasible. Having drawn 162 mile and 67 mile radii from each transmitter site, and taking into account the co-channel and adjacent channel separation requirements, it was possible to determine the dominant protection for each channel in each geographic area. Those areas which were not subjected to restrictions on a particular channel were then shaded in color (the color being coded to the channel number), so as to display readily the practical impact of any sharing arrangement. The analysis takes into account all of Southern Ontario in the Windsor-Ottawa corridor.

Conclusions

By referring to the maps, it is evident that there is very little spectrum available for land mobile sharing at the low end of the band (channels 14-20).

While there is more spectrum available above channel 70, it would be necessary to institute a study to determine which of the existing high-end allocations could be substituted with lower channels. In addition, it would be necessary to preserve those assignments which are already in operation.

The spectrum availability is summarized in Table 1.

A similar analysis will show that, by deleting the channel 14 allocations in Ottawa and Sherbrooke, and the ch. 19 allocations in Drummondville and Gananoque, it would be possible to use ch. 14 and 19 in Montreal for land mobile purposes.

It must be understood that the channel availability is still subject to co-ordination with the FCC. Particularly in the Chatham-London-Windsor areas, there will be conflicting demands from land mobile users in Canada and the United States.

It is highly doubtful, then, that any meaningful relief can be obtained by land mobile sharing of television channels at either the low end or the high end of the UHF television broadcasting spectrum. The close geographical proximity of densely populated American cities to those Canadian cities which most demand spectrum relief precludes the use of most frequencies, not only at the extreme ends of the band, but throughout the entire UHF television broadcast band.

The time has come to define clearly the priorities with respect to the usage of these critical frequencies. The Canadian broadcasting system, because it provides services in two languages from coast to coast, requires a different approach to UHF channel utilization than that being proposed in the United States. The broadcaster must justify his use of a scarce resource (spectrum) by proving a demonstrated need. There is no such onus on a land mobile

TABLE 1

Location	Channels Useable by Land Mobile	
	A	B
Ottawa	none	14, 19
Toronto	14	14
Kitchener	14	14
London	14	14, 16
Chatham	16, 70, 74, 83	16, 70, 74, 83
Windsor	16, 70, 74, 75, 83	16, 70, 74, 75, 83

A: Retaining all existing assignments and allocations.

B: Deleting existing low-end allocations—i.e., ch. 16 in Oshawa, 14 in Ottawa, and 19 in Drummondville and Gananoque.

Note that, for the purposes of this discussion, allocations are channels designated for a particular community, but not assigned. Assignments are designations for which licences either have been issued for construction, or stations are actually in operation.

user, be it a large oil company, fire and police services, or a pizza parlor. All feel that they have the use of spectrum as a right, not a privilege. If land mobile is allowed to expand without justification, like a gas expanding in a vacuum, it cannot help but fill all available space. Witness the "Rubber Duckie" congestion of the Citizen's Band.

The silence of the broadcasting industry in Canada has been appalling. Doubtless some of the prosperous VHF operations

would just as soon not see any spectrum available for any other television service which might potentially dilute their audiences. Yet this self-centred view is not sufficient to maintain and foster the growth of the broadcasting industry in Canada.

Don't sit back. Remember what happened to the old FM Broadcast Band?

Acknowledgement: The author wishes to acknowledge the efforts of Frank Gratzner in preparing the comprehensive analysis which is so fundamental to this report.

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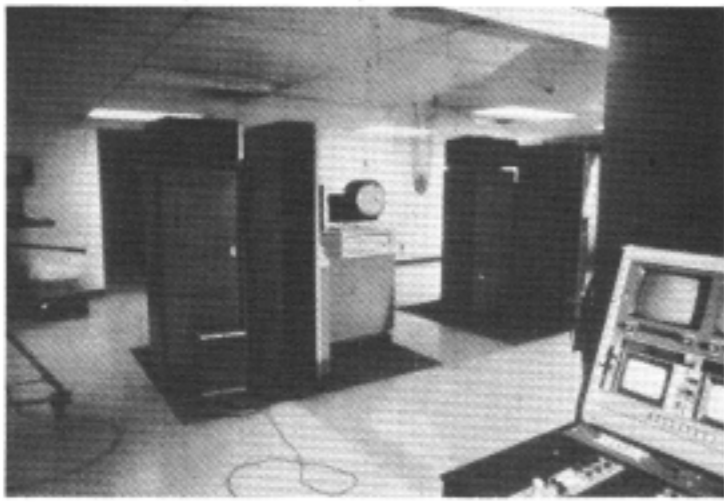
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| London Cable TV | Cable 10, Mississauga |
| CKCO-TV Kitchener | Shell Canada, Toronto |
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| CKVR-TV Barrie | CFCF-TV Montreal |
| CKNC-TV Sudbury | C.E.C.Q. Quebec City |
| CFTO-TV Toronto | CJBR-TV Rimouski |

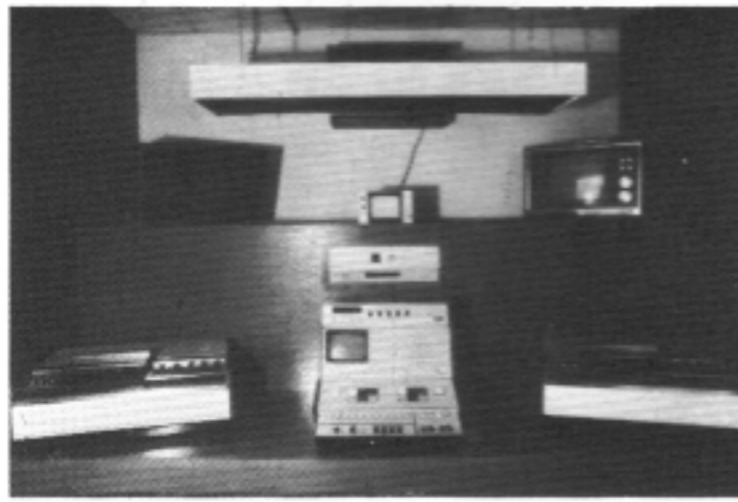
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CKVU-TV SIGNS ON

Mobility is the watchword for Vancouver's new local station

ENG—Electronic News Gathering—facilities are front and centre as Vancouver's new independent television station, CKVU, makes its debut.

Licensed a year ago to Western Approaches Limited, headed by Bill Bellman, Daryl Duke and John Nichol, CKVU-TV was sche-

duled to go on-air September 5th. Operating on UHF channel 21, it becomes the city's third TV station, joining CBC's CBUT (channel 2) and BCTV's CHAN-TV, the CTV network affiliate (channel 8). As an independent community-oriented station, CKVU is placing strong emphasis on local news and events, with a comprehensive two-hour feature, programmed seven days a week. Michael Hurcum, whose experience includes CBC Television and independent CITY-TV in Toronto, is Director of Technical Services for CKVU. "Due to the nature of our 'flagship' show," Hurcum told BROADCAST EQUIPMENT TODAY, "CKVU will be heavily into electronic news and will use five Hitachi 3030 portable TV cameras with time code-encoded and recorded in horizontal sync for editing.

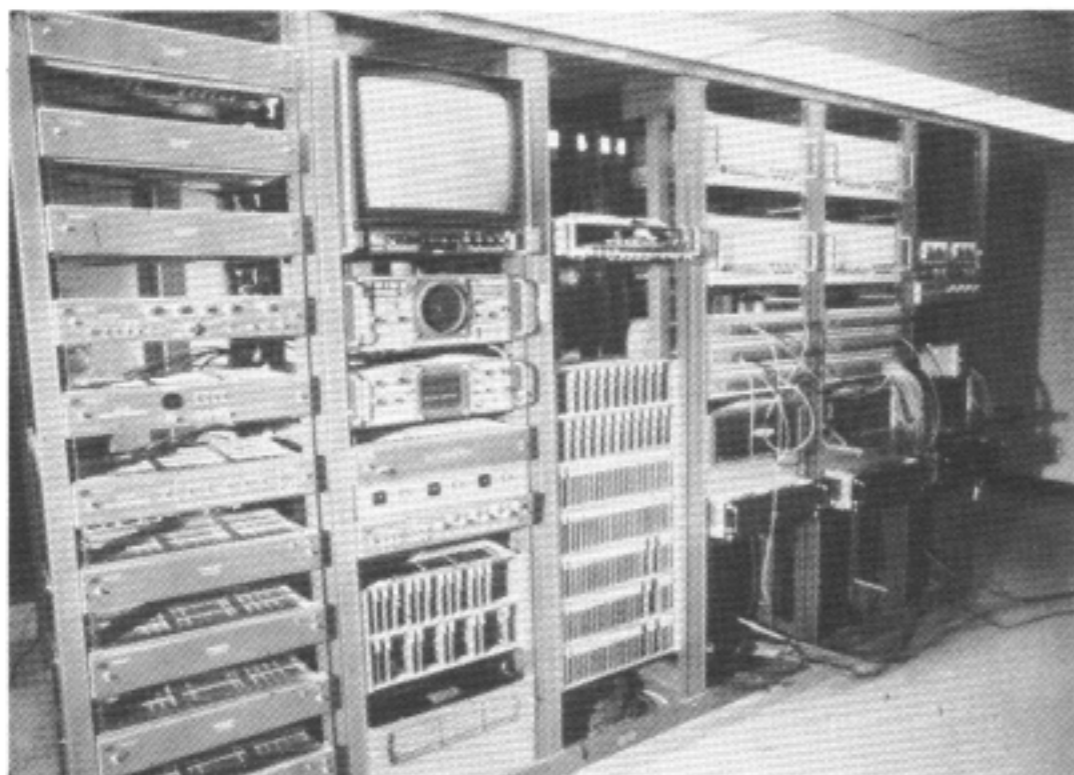
"The news tapes recorded on location will be screened on modified 3/4-inch Sony cassettes. These have a device, manufactured by Television Research International, Inc., (TRI) of California, which will allow greater control of the tape by giving a tape shuttle control to pick the ins and outs of all edit points.

"The selected edits will then be edited on a TRI EA-5 editor to produce quick, hard-hitting reports. These are played back on Sony cassette, via a CVS time base corrector to air.

"The TRI device also doubles as an 'off line' editing device for the five 2-inch VTR 1200's that the station has purchased, along with a CDL time code editor—the EDS 200." →



Studio control room

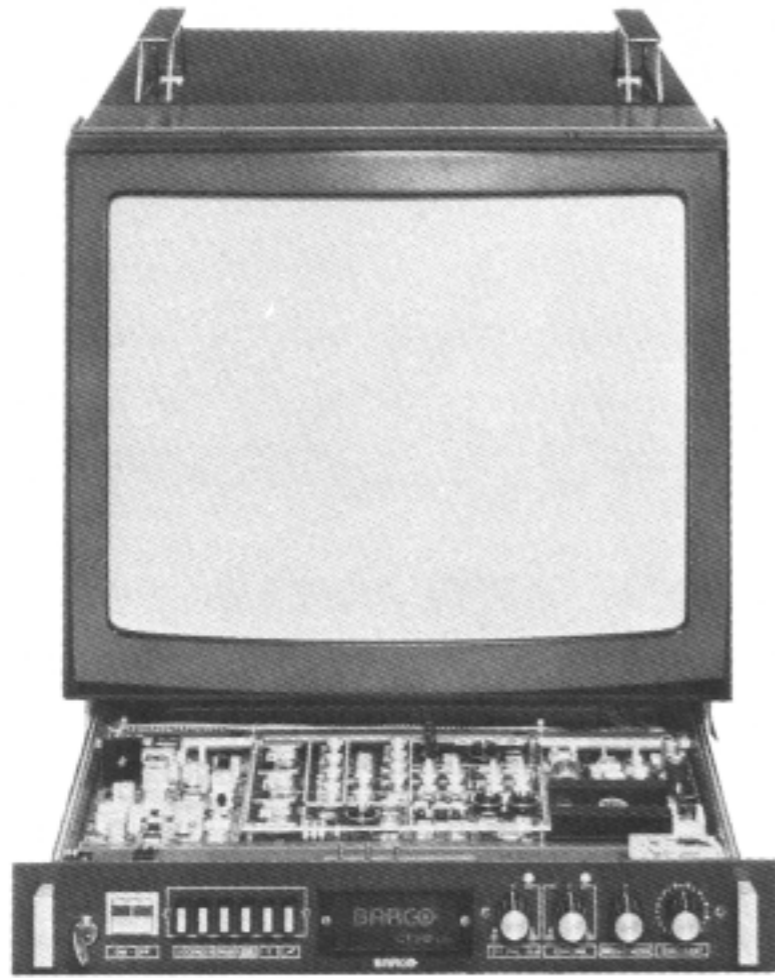


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CFTO-TV TORONTO	CBC HALIFAX
(Studios, Mobiles, Editing)	(Studios and mobile unit)
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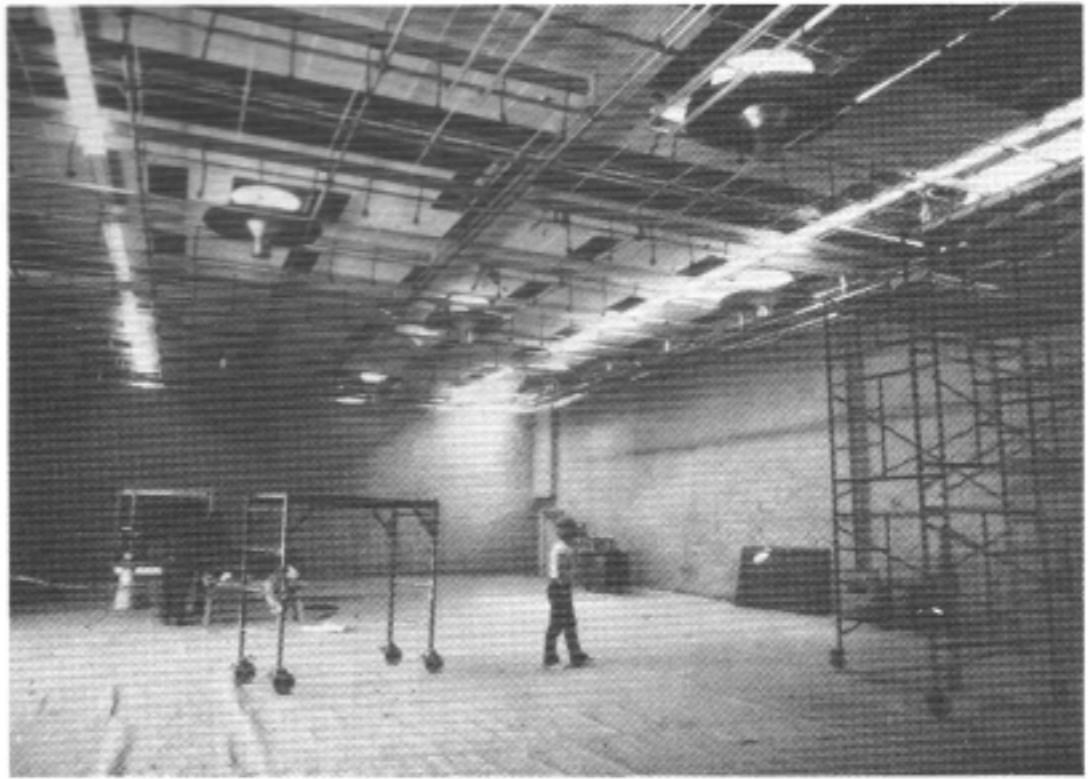
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CKVU-TV Signs On



Main studio

Further mobility is provided by two mobile units, small and efficient in design, each equipped with two Philip's LDK 25 cameras.

Studios for CKVU-TV are located in downtown Vancouver at 180 West Second Avenue. The station occupies 31,500 square feet of a building located on the south shore of False Creek, with a view of the mountains north of Vancouver.

There are two studios—the larger, which has approximately 4,500 square feet (85' × 55'), is used to originate the daily news show.

Included in CKVU-TV's facilities are:

- Philip's LDK 25 cameras
- Ross studio switcher
- Barco color monitors
- McCurdy audio and intercom
- Image Video master control and audio/video routing switcher (20 input—20 output)
- Ianiro studio lights, with lighting controls by Control Lighting of Calgary.

The transmitter is situated in the Gulf Islands south of Vancouver and midway between Victoria and Vancouver. With an antenna height of 2,900 feet above sea level and Effective Radiated Power (video) of 1.2 megawatts, CKVU-TV places a Grade A signal into both Vancouver and Victoria.

The antenna was purchased from Andrews and the transmitter, from Pye, is rated at 55 kw and utilizes new high efficiency klystrons. The studio-transmitter link is by Lenkurt and is fully protected against breakdown by standby fax.

Editor's note: Our thanks to Michael Hurcum and Joan Alford of CKVU-TV for their assistance in preparing this material for publication.



Video control

—Photos by Peter Mills

Eleven FM Stations Licensed

ALL-NEWS COMES TO CANADA

About a year from now, Canadian listeners will be tuning to a new experience: all-news radio.

The country's first all-news service is an ambitious one—a chain of eleven FM stations in major English-speaking centres from coast-to-coast. Known as "CNR"—Canadian News Radio—it was licensed on July 12, 1976, just six months after the concept was first presented to a Toronto CRTC hearing in January.

Cities Licensed

The stations, each with 100,000 watts power, will be located in the following cities:

Vancouver (96.1 MHz)
Calgary (103.1)
Edmonton (105.9)

Regina (94.5)
Winnipeg (99.1)
London, Ont.
Toronto (99.1)
Ottawa
Saint John, N.B. (99.7)
Halifax, N.S.
St. John's, Nfld. (101.9)

A 12th application, for Montreal, was denied by the CRTC, and frequencies are yet to be determined for the stations in London, Ottawa and Halifax.

The group which successfully presented the plan includes David Ruskin, a television producer formerly with the CBC, CJOH-TV Ottawa and CITY-TV Toronto, consulting engineer Israel Switzer and lawyer Jerry Grafstein.

After the CRTC issued its policy on FM, Ruskin had consulted Switzer with a view to applying for a Toronto station. As their discussions developed, a chance meeting at CITY-TV brought Grafstein into the picture. Switzer pressed for the all-news format, with not one station but a national chain of owned-and-operated stations—affiliates, he argues, just cannot support a network in Canada. Financial backing came from Agra Industries Limited, a Saskatoon-based company with holdings in food and beverages, engineering and communications. Agra is best known within the broadcast industry for its cable TV systems in six western communities.

At first, observers gave CNR only an outside chance of being licensed. But as the group presented its case at hearings across the country, it became more confident and persuasive, overcame objections, and found—to its astonishment—that it was the only applicant for FM in several cities.

Winning 11 licenses at once for major cities throughout the land must go down in history as a considerable triumph, but it's not without problems.

Montreal Excluded

The lack of Montreal coverage weakens the commercial viability of the network.

The Ruskin group recognized the CRTC's concern about the balance of English to French stations in Montreal, and applied for a non-commercial or Class B frequency, but the Commission ruled that it

"does not intend to license an additional English language commercial frequency in the Montreal area". It suggested that CNR purchase or affiliate with an existing station, either AM or FM. Meanwhile, the network will still be expected to have a news-gathering bureau in Montreal.

New frequencies must be found in London, Ottawa and Halifax. London, says Switzer, is the biggest problem, as any frequencies in the non-commercial band, below 92 MHz, require protection for Global Television's channel 6 transmitter at Paris, Ont.

Ottawa will be the flagship station of the network, with Toronto next in staff size. There will be a news bureau in most major regions and all stations will have local origination studios, feeding news to Ottawa by telephone.

Switzer hopes to share existing towers wherever possible, and there are good prospects of this in Calgary, Edmonton, Regina, Winnipeg and the Atlantic locations. A new site will be needed in Vancouver, possibly Grouse Mountain. In Ottawa, Camp Fortune will be used—either by multiplexing into the existing antenna or sharing a new one with the station newly-licensed to Harvey Glatt.

CN Tower Unsuitable

Toronto presents an "interesting" situation, Switzer concedes, with the network "resisting" pressure to use the CN Tower.

The frequency of 99.1 offers a very favorable position on the dial, but adjacent channels in Buffalo and Rochester must be protected. The height of the CN Tower—over 1400 feet EHAAT—would allow only 40 kw power using a separate directional antenna. This arrangement, a costly one, was proposed by CKEY in its application for an all-news FM station. Use of the CN Tower's existing FM master antenna, which is omnidirectional, would force a further reduction in power to only 4 kw.

The Ruskin group's application proposed an antenna on the new Bank of Montreal tower (First Canadian Place) with 1000 feet EHAAT and full 100 kw power; this would provide an identical service contour to 40 kw at 1400 feet, but at much lower cost than the CN Tower. →

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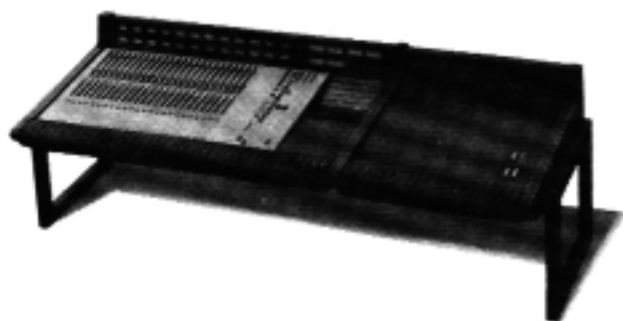
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ALL-NEWS NETWORK

Continued from page 14

Switzer feels that the money for a place on the CN Tower could be better spent on programming. He cites CHFI's recent admission, in a letter to a Toronto newspaper, that CN Tower costs had forced a reduction in the station's programming budget. Strong competition in the market, with CHFI already advertising that it is the "most powerful", is another reason for seeking a site which allows maximum 100 kw power.

The award of 99.1 to CNR means that Allan Slaight's CFGM in Richmond Hill, which won a licence for a rock format on FM, will have to use another frequency—either 107.1 or a Class B channel.

Expansion Possible

Will the network expand? Saskatoon would be high on the list of cities to be added to Canadian News Radio. Rebroadcasters or affiliates could also be used to provide service in many areas.

Networking will be over a 5 kHz continental line leased from CN/CP or Bell. Satellite transmission is not likely. Switzer notes that in the United States there is "genuine competition" in tele-communications: line costs are cheaper and users can look forward to competitive prices for satellite transmission. In Canada, he says, "it's for the benefit of the telephone companies, not the user".

All lines and boards will be mono; however a stereo simulator or band-splitter will be fed into each transmitter to give a stereophonic effect. The network plans to use the Orban Parasound 245E stereo synthesizer, which divides the mono signal into five frequency bands—three into one stereo output channel, two into the other, with filters synthesized so that the sum of the two output channels is identical to the mono input.

SCMO Teletype Service

All of Canadian News Radio's stations are licensed for subsidiary communications multiplex operation—SCMO (known in the States as SCA—subsidiary communications authority). CNR will use it for an alpha-numeric news service, distributed by a parallel teletype network to its transmitters. The service will be primarily for cable television systems, which will be able to receive it on SCMO rather than over lines. Commercials would help to finance the service and, along with promos for CNR's

programming, would be interspersed among the news items.

The technical format would be compatible with either teleprinter (TPT) or television character generator (TCG) systems. It would be received by conventional SCMO receivers, using a special adapter to connect a teleprinter or character generator.

Canadian News Radio hopes that the CRTC will require cable systems to carry their service as an alternative to present services, particularly since there would be "practically no cost" to cable systems.

The service is seen as an initial step towards providing a variety of information services by means of SCMO. The technical standards established for FM decades ago were sufficiently generous to allow such information, as well as stereo transmission, withing each channel.

Programming for the network will be based on a "news wheel" which establishes a pattern for each hour. American and international news will be supplied by NBC's News and Information Service (NIS), carried by about 70 stations in the U.S.A. The service provides 50 minutes of information per hour and CNR would extract items of interest to Canadians.

The network will sell advertising on a national, regional or local basis. Splitting the network will be done manually, at first, but ultimately may be automated. Based on the U.S. experience, demographics tend toward older, more affluent males; and spots will be packaged to take into account the frequent turnover of audience. The all-news concept has proved a commercial success in the U.S., taking the lead in a number of major markets. Advertisers favor the format to reach an audience that spends little time watching television.

Call letters? Sruki Switzer, who muses that he got into radio "backwards"—"everyone else started in radio, then went to TV, then into cable; I started in cable, went to TV, now radio"—would like to use a CN series. He thinks CN belongs to Morocco and plans to discuss it with their ambassador . . .

The CRTC has required CNR to completely implement its network by the fall of 1979. And so, the five-year plan for what must be the most ambitious project in the history of private radio in this country, will be contracted down to three years.

Switzer, Canada's revolutionary broadcast engineering consultant, remains unperturbed. "There's really nothing revolutionary in the technology," he explains.

AM NEEDS NEW RULES

Israel Switzer would rather be on AM with All-news. Here are his proposals to make more frequencies available.

A frequently-heard comment on the granting of FM licences for an all-news format is that it's a waste of FM frequencies to use them exclusively for the spoken word.

Canadian News Radio and its engineer, Israel (Sruki) Switzer recognize the problem: basically, it's the shortage of AM frequencies.

Switzer, whose provocative ideas have already rocked broadcasting's boat on numerous occasions, proposes a solution.

He suggests that North America adopt practices used elsewhere in the world, namely:

- Use of 9 kHz instead of 10 kHz channeling.
- Use of networks of synchronous transmitters.
- Limitation of occupied bandwidth.

9 kHz Spacing

Common in other parts of the world, a 9 kHz channel width would open up 12 new frequencies on the AM band—e.g.,

Present	9 kHz
540	540
550	549
560	558
570	567
580	576
	585 (new)
590	594
etc.	etc.

No existing station would shift more than 4 kHz in frequency.

"The only problem that I can foresee," says Switzer, "is the effect on directional patterns. Tower spacings will have changed by a maximum of $4/580 = 0.7\%$ and I suggest that this would have a negligible effect on existing patterns. Tower current phases can be corrected by minor re-tuning of tuning elements. Tower heights in terms of electrical length will not change appreciably."

The major problem, Switzer anticipates, will be the opposition of the present com-

mercial broadcasting "establishment".

"Why should existing AM broadcasters accept any changes which would increase economic competition in their field?" But he hopes that public interest will motivate the FCC in the States, Canada's CRTC, and other authorities in Region II to act on the plan. In the light of the ITU confirmation last year of 9 kHz channeling for Regions I and III, Switzer urges conformity to 9 kHz to open up new opportunities for minority interests in the AM spectrum.

Synchronous Networks

British and European experience indicates that existing 50 kw stations could better serve their intended coverage area by dividing their authorized power into several strategically-located synchronized transmitters of lower power.

"If super-power is to be allowed," Switzer contends, "it should be in the form of multiple 50 kw transmitters operating synchronized. This reduces the problem of

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"If anyone wants to trade us an AM with equivalent coverage, we'll gladly take it."

concentration of power at a single transmitter site."

Occupied Bandwidth

While a relatively minor matter, limitation of modulation sidebands by the use of low pass filters—the BBC uses a 4.5 kHz filter—might contribute to reducing adjacent channel interference and easing channel allocation criteria.

Power Increase for All?

Switzer also suggests that a general power increase for all AM stations might be useful.

"If all AM transmitters increased their power at the same time and by the same amount, the relative protection ratios would remain unchanged, but service



would be improved by improvement in signal/noise in many areas where ambient noise has increased over the last few decades. Super-power operation by some broadcasters might then be more acceptable to their competitors, if the same relative increase in power was allowed to all AM broadcasters."

The proposals could clear the way for more efficient use of the AM band, with scores of new stations: how regulators and the industry will respond remains to be seen. Meanwhile, Switzer fields criticism of the use of FM frequencies for "AM" programming by pointing out that the CBC is now doing the same thing extensively throughout Canada because of the scarcity of AM channels.

"If anyone wants to trade us an AM with equivalent coverage, we'd gladly take it."



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Okanagan Radio Limited operates four AM radio stations and one FM station: CKOK AM/FM Penticton, CKSP Summerland, CKOO Osoyoos and CKGF Grand Forks, B.C.

CKSP, CKOO and CKGF all program from their own studios for approximately six hours per day. For the remaining 18 hours, programming to these satellites originates from CKOK-AM in Penticton.

At the beginning of a long-term rebuilding schedule, it was decided that, during the 18 hours of common programming to all four AM stations, there should be a means of giving each of the three satellite stations its own identity, and possibly its own commercial content.

I was given the task to design, build and test a "Cart Split" system that would do the job.

Having been in broadcasting a relatively short time, I was aware only of a system that was being used by a three-station chain. This system was made up entirely of relays and pushbuttons and could only select certain split combinations from a three-deck cart machine. It also required both secondary and tertiary cue tones to restore it to a normal "non split" mode.

After examining this three-station split operation, I decided that although it worked, it was not for us. It had a very limited number of split combinations and was heavily laden with relays. We needed something that was more versatile, easier to operate, and more reliable.

In January of 1975 I started the design and construction of what I believe to be an

entirely new concept in "cart splitting."

The system has been in use since May 1975, and has proven to be a very profitable device to Okanagan Radio Ltd. It has been trouble-free and has saved many man hours. Although extremely versatile, it is a simple device to operate and has been accepted with great enthusiasm by the announcers.

OPERATIONAL DESCRIPTION

The "cart split" system that I installed in CKOK's main control room is interfaced with two ITC three-deck cart machines. As seen in the enclosed photographs there is a momentary push-button for each of the six cart decks, to each of the four stations, i.e. six pushbuttons for each station. There are two other pushbuttons labelled "normal" and "split and run".

The system is so designed that any combination of up to four of the six carts can be split. However, it does not mean that there must be four carts for a four-way split, i.e. Cart 1—CKOK, Cart 1—CKSP, Cart 2—CKOO, Cart 3—CKGF is an example of using three carts for a four-way split.

To "ready" a split operation one simply presses the desired combination of momentary pushbuttons.

In a "ready mode", the lighted pushbuttons blink—indicating to the operator that the system is ready. Then "split and run" is pushed—the flashing lights come to steady on, the readied carts start, and the station program feeds are split. After the system has received a secondary cue contact from each of the running carts, it auto-

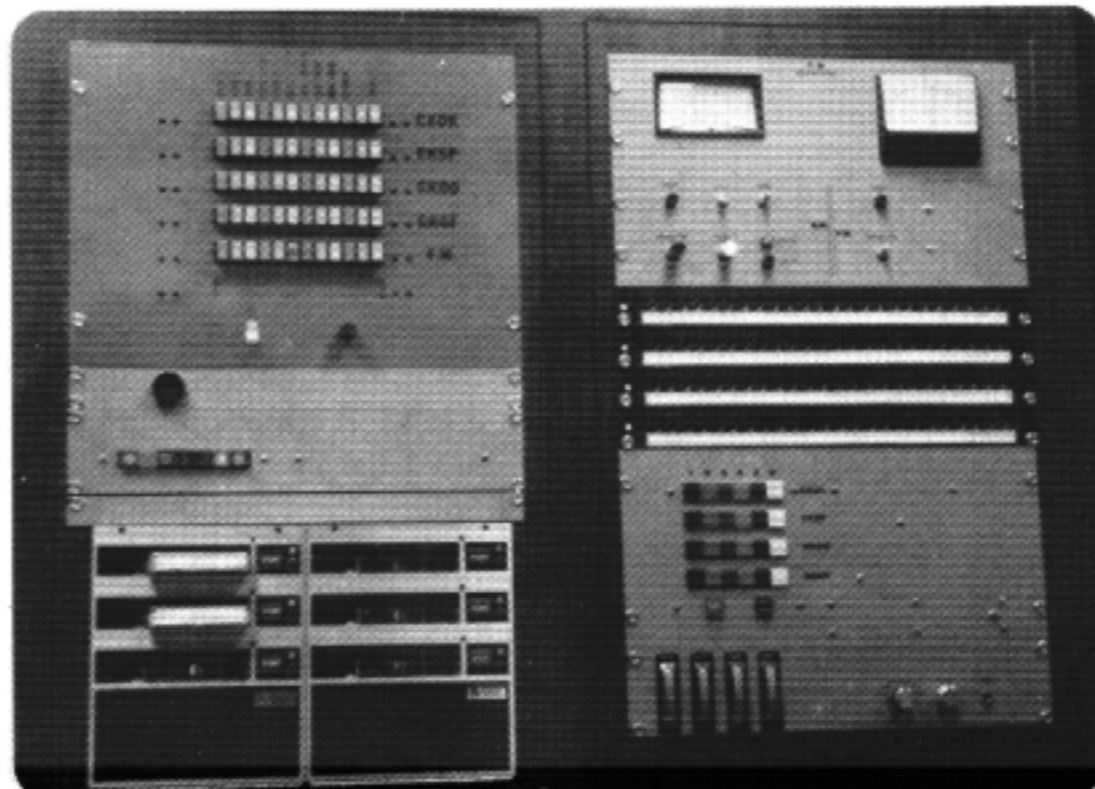
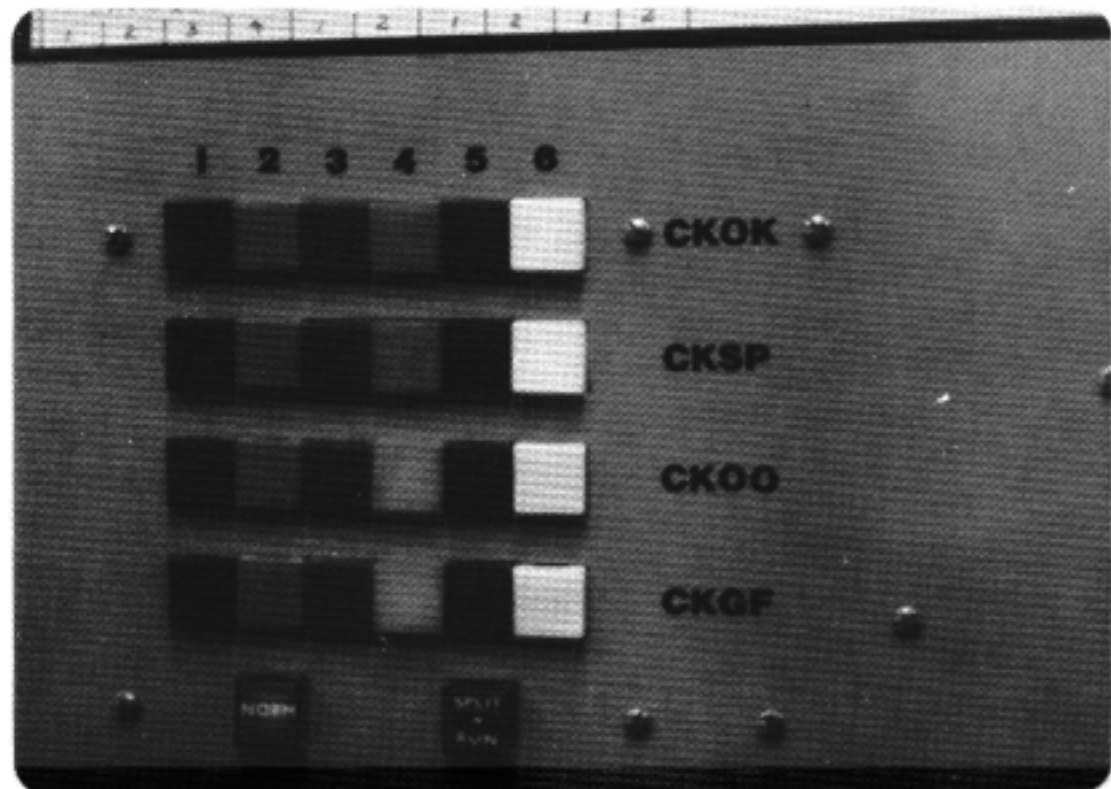
matically restores to normal. It will not restore unless it receives a contact from each of the carts. This insures that each station has received its full split cart before the operator continues normal programming.

When restored to normal, all lighted pushbuttons are cancelled and the system can be readied again. Note that four of the six carts can be readied at any time for a "split", while the remaining two carts are still being used for all stations' programming. Should the operator desire to cancel a readied combination he simply holds down the "normal" button and momentarily depresses "split and run". Should he ready the wrong combination he can change it by depressing the correct combination, as this automatically cancels the previously readied situation; i.e., only one ready light per row of six is possible. If #1 was readied to CKOK and then #2 was depressed, it will ready #2 and cancel #1. This applies to each row of six pushbuttons. Any of the four stations that is not readied will not split. This allows us to program to one or more satellite stations from a source other than our main control room, while still splitting to the remaining satellite stations.

TECHNICAL DESCRIPTION

The purpose of cart split is to simultaneously send cartridge information from any one of six cart machines to any or all stations, with the exception of CKOK-FM.

This means that any combination of one



CKOK CART SPLIT SYSTEM

to four carts may be sent to any of one to four stations from any of up to four of the six cart machines. At no time can more than four carts be readied at one time. Hence only one cart in each row of six can be readied at once. The system is basically a 6 × 4 switching matrix.

All functions with the exception of audio buffering are performed using CMOS logic. All programming to all stations is routed through this device, and it is therefore imperative that it be functioning correctly at all times.

Power Supply

The power supply is a conventional full wave bridge. Large filter capacitors are used to insure full voltage to the lamps when they are being tested. The lamp supply is fused in the event of a short circuit.

Following the bridge are three 7800 series regulators: the 7824 supplies lamp voltage for the "normal" and "split/run" buttons; the 7812 supplies 12 V (DC) for the logic, switching, and buffers; the 7805 supplies 5 V (DC) bias for the buffers. All 7800's are short circuit proof.

Also contained in the power supply

chassis is the flashing circuit. It is basically an astable driving the pass transistor. It is normally used in a flashing mode, but this can be disabled with a switch on the top rear of the chassis. Beside this switch is the "lamp test" switch which turns on all lamps to insure they are functioning. This test does not affect the logic operation in any way.

All components are well over-rated for long life and dependability.

Lamp Drivers

Each lamp driver uses a 2N4401 transistor, a very basic circuit. The diode matrix is used for lamp test only. Numbers are shown on the 24 cart lamp drivers to correspond to the numbers shown on the push-button mounting panel. The "normal" and "split/run" drivers are located on the logic board and are also numbered.

Logic Board

The 24 cart select latches are in four identical rows, and correspond to the 24 cart select pushbuttons. Each button has a resistor and capacitor for noise suppression. (As CMOS is virtually immune to noise, this is merely an added precaution.)

When any of a row of six pushbuttons is activated, the output will cause a reset pulse to reset all latches in the row except the one depressed.

A test switch, when in "test" position, will inhibit all switching and retain normal programming; the logic can then be tested or repaired.

Audio & Switching Board

All audio switching is done using 4016 CMOS switches. Each cart has a switch associated with it. These switches are controlled by the Q of each select latch. Their inputs are kept at +5 V (DC) bias from the appropriate 741 buffer bridging amplifier. These cart bridging amplifiers have a gain of one.

Also included in the audio switching are IC46 and IC47 switches which determine what program source goes to the output amplifiers. These amplifiers also are for buffering purposes and have a gain of one, and bridging input impedance. Their output impedance is very low and drives the station line amplifiers. The remaining amplifiers are for the routing switcher outputs.

Because of limited headroom with the 741's all inputs are set for 0 DBM with a steady state tone. This allows approximately 8 to 12 DBM headroom.

All inputs and outputs appear on the jacks on the rear panel so that the unit may be easily removed for service.

Cart Mix AM/FM Isolator

This circuit was necessary to allow CKOK-AM spots to be fed to FM when simulcasting. It also prevents all carts from being fed to the console at once.

Its operation is as follows: one half of a quad switch switches the output of the cart mixer, and the other half switches the CKOK output from the cart split. Switching control comes from the split/normal latch. In the normal mode the output from the cart mixer is fed to the console, but during a split mode the cart mix output is opened and the console is fed from the CKOK cart split output. This in turn is fed to FM via the routing switcher. During a split mode the operator will hear only the CKOK feed.

Servicing Features

I would like to point out some of the features that were installed for ease of servicing:

- All IC's are in sockets
- Boards swing out on a hinge for easy access
- A "test/operate" switch to allow full logic testing without audio switching
- All IC sockets identified by number
- "Lamp test" switch which turns on all pushbutton lamps
- Remote "normal" and "split and run" facilities
- "Disable blink" switch—disables blinking in ready mode to a steady lamp
- All audio inputs and outputs are plug-in Cinch-Jones connectors
- All cue contacts and cart splits are plug-in Cinch-Jones connectors
- "Power up clear" circuits ensure the system restores to normal after a power failure.

Conclusion

This system has given us the flexibility to send separate short programs via carts simultaneously to our four AM stations and sell commercials for our satellite stations using only one operator at CKOK-AM.

But most important, it gives each of our stations its own identity 24 hours per day.

I believe this particular system is unique in Canada, and possibly in North America, in that it uses no relays and no transformers, with state of the art CMOS logic and switching throughout. It is extremely flexible, draws very little power, and has proven to be very reliable.

Brian O'Neill is chief engineer for Okanagan Radio Limited, Penticton, B.C. His article was prepared as a submission for this year's CAB/CGE—sponsored Col. Keith Rogers Engineering Award.



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A review of current policies and decisions of the Canadian Radio-television and Telecommunications Commission

PUBLIC HEARINGS

Ottawa, September 8

OWNERSHIP SHAKE-UP FOR SAULT STATIONS

Applications by Huron Broadcasting Ltd., a new syndicate headed by Carmen Greco, owner of CKCY Sault Ste. Marie, Ont., to acquire all broadcast facilities in the Sault area will be heard at the September 8 CRTC hearing in Ottawa.

The new company would acquire Highland Radio TV (CJIC AM/FM/TV and CJWA Wawa); Lake Superior Cablevision Ltd.; and Algonquin Radio-TV (CKCY AM/FM, CJNR Blind River, CKNR Elliot Lake and CKNS Espanola); Huron would then sell 42-year-old CJIC, along with CJIC-FM, to a group headed by Russ Hilderly, now program director of CKCY. CJIC AM/FM would assume new call letters, while CJWA would become part of the CKCY network.

CJIC-TV would continue as the CBC affiliate, and Huron would seek a twin-stick operation, with a new station to be known as CKCY-TV, to bring CTV service to the area.

* * * * *

Other applications include:

- New French-language AM stations: at Ville Degelis, Que., 1370 kHz with 1 kw, by Emilien Nadeau; and a rebroadcaster at Lac Etchemin, Que., 1240 kHz with 1 kw day, 250 watts night, by CKRB St-Georges.

- Two Quebec City area stations seek power increases: the CBC's CBV to 50 kw, with change of antenna site; and CFLS Levis to 1 kw, with a change of frequency from 1240 to 920 kHz.

- Radio Communautaire FM seeks to amend its FM licences for Chicoutimi and Chambord, Que., to ease the constraints on financing through sponsored programs.

- In the continuing effort to provide TV service to northeastern New Brunswick, ATV (CKCW-TV Moncton) would change the affiliation of CKCD-TV Campbellton and CKAM-TV Upsalquitch/Newcastle to CTV, and add low power broadcasters at Chatham, Blackville, Doaktown and Boiestown; while New Brunswick Broadcasting (CHSJ-TV Saint John) would add a rebroadcaster at Boiestown to carry CBC service.

- The CBC has applied for French TV outlets at Prince Albert (27 kw, ch. 9) and Saskatoon (132 kw, ch. 13).

- Low power TV rebroadcasters have been requested at Belleoram, Cartwright and Harbour Breton, Nfld. and Tofino, B.C. (by the CBC) and at 16 Mile, B.C.

- FM stations to rebroadcast the AM network service are sought by the CBC at Burns Lake, Fort Fraser, Houston and Smithers, B.C.

Ownership changes:

- Radio Sept-Iles Inc.—50% to Marche BANCO Ltee.

- Compagnie de Television de Sept-Iles Ltee—acquisition of cable system in Port Cartier, Que.

- OECA—acquisition of its Toronto transmitter facilities from CBC.

- General Broadcasting (CFMC-FM), Saskatoon—to Gerald Fraser and N. M. Rudniski.

- Radio Laurentides (CJEN), St-Jerome and Radio Lachute (CJLA), Lachute, Que.—100% to Radio Inter-Cité Inc.

- Radio CJVR Ltd., Melfort, Sask—100% to Marchar Management Ltd.

- Calgary Cable TV Ltd.—increase of Cablecasting Ltd. holdings to 100%.

- Wingham Cable TV Ltd.—acquisition by Country Cable Ltd., Listowel, Ont.

The Commission will also deal with the possible suspension or cancellation of the licence held by **CHOV-TV Pembroke, Ont.** On August 1st the owners, Ottawa Valley Television, stopped operating the station, which has had recurring labor and financial difficulties. It has been operating since as a rebroadcaster of CBOT Ottawa.

* * *

Further public hearings scheduled:

Oct. 5—Halifax (Lord Nelson)

Nov. 16—Ottawa (Gov't. Centre)

Dec. 7—Toronto (Sheraton Centre)

Jan. 31—Regina (Regina Inn)

Mar. 1—Ottawa (Gov't. Centre)

Mar. 29—Montreal

May 3—Vancouver

June 7—Ottawa (Gov't. Centre)

Ottawa, October 25

REGULATION OF COMMON CARRIERS

A special hearing is to be held at the Skyline Hotel, Ottawa, commencing October 25, to discuss the CRTC's regulation of telecommunications carriers.

On April 1st of this year, the Commission was re-structured and given jurisdiction over federally-regulated carriers. (These include Bell Canada, B.C. Tele-

phone, Telesat Canada and CN/CP Telecommunications.)

In the statement *Telecommunication Regulation—Procedures and Practices* issued July 20, 1976, the CRTC outlines its approach to these responsibilities and invites interested parties to participate in the October 25 hearing. Written submissions are to be filed by **October 13** with the Secretary General of the CRTC, 100 Metcalfe St., Ottawa, Ont. K1A 0N2.

Ottawa November 16

LICENCE FEES TO BE AMENDED

A hearing of the CRTC to commence November 16 at the Government Conference Centre in Ottawa will consider proposed amendments to the licence fee assessment system for broadcast operations.

The Commission hopes to eliminate inequities in the system and "streamline" the assessment process. The two chief problems at present are: (1) the basis of "gross revenue" sometimes includes revenues not derived from broadcasting; and (2) the burden on smaller licensees is greater, proportionately, than on the larger ones.

Under the new regulations, broadcast licensees' fees would be based on commercial time sales, while those of cable licensees would be levied on subscription revenue, including installations, but excluding converter sales.

Networks, previously exempt, will not be required to pay a licence fee; however, under the new system, the total paid by a network and its affiliates will amount to about the same as fees previously paid by the affiliates alone. It is intended that all rates proposed be no higher than those presently paid by licensees.

Revenues of joint AM/FM stations or of rebroadcasters are to be combined for fee assessment purposes.

To simplify the assessment process, licensees will calculate their own fees, based on revenues for their return year, ending August 31, not the licence year. Payments are to be made with the annual return.

The basic fee is \$25. To this is added 1½% of revenues over \$75,000 for cable systems; over \$300,000 for radio stations; and over \$1 million for TV stations. Applicants for new stations are to pay a fee of \$25, which will serve as the licence fee until operations commence, should the licence be granted.

Interest of 1½% per month would be charged on fees not paid by November 30th each year. →

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DECISIONS

AM Radio

NEW AM STATIONS FOR BRANDON, FREDERICTON

The CRTC has approved the following applications for AM radio stations:

● **Harvey F. Davidson**—10 kw on 1570 kHz at Brandon, Man. Applications for Neepawa and Virden were denied, as these areas should receive an adequate signal from Brandon. If coverage proves inadequate, the CRTC recommends application for rebroadcasters under the *Low Power Rebroadcaster* policy released July 13, 1976.

● **James W. Ross**—10 kw day, 1 kw night, on 1400 kHz at Fredericton, N.B. Applications for FM for Fredericton by Capital City Broadcasting and Outreach Radio Ltd. were denied, as "neither applicant satisfied the Commission that its proposed personnel and financing would be sufficient". The Outreach decision reaffirms a long-standing policy against granting licences to denominational or other special-interest groups.

● **Dinosaur Broadcasting**—1 kw day, 250 watts night, on 1400 kHz at Stettler, Alta.

● **Federation of Students**, University of Waterloo—20 watts, carrier current, on 820 kHz at Waterloo, Ont.

Other decisions:

● **CFGM Broadcasting Ltd.**, Richmond Hill, Ont.—licence renewed with approval for change in frequency from 1310 to 1320 kHz; CFGM is to strengthen local service to Richmond Hill and York County.

● **Galt Broadcasting Co.**, Cambridge, Ont.—change in frequency approved from 1320 to 960 kHz.

● **Countryside Holdings Ltd.**—Transfer of ownership approved to Eastern Broadcasting Co. Ltd. (85%) and Gordon V. Marratto (15%), affecting CKOX Woodstock, Ont., CJCS Stratford, CFOR Orillia, (100%), CKAR Huntsville—Parry Sound, (87.9%), and CKMP Midland (51%). The CRTC notes that the new owners are to improve technical quality and overall performance of the stations, appointing at least one local director for each.

● **E.K. Radio Ltd.**, Trail, B.C.—Transfer of 51% control from Lloyd J. Hoole to David Hoole and Francis Hogg approved.

● **CKCH Radio Ltee**, Hull, Que.—power increase to 50 kw day, 10 kw night, with change of antenna site, approved.

● **CFRB Limited**, Toronto—network approved for Argonaut football games on CFRB, CFRO Chatham and CHOK Sarnia, Ont.

● **Radio O.B. Ltd.**, Winnipeg—licence renewed with caution re: open-line program and treatment of public issues.

● **CKNX Broadcasting Ltd.**, Wingham, Ont.—licence renewed: owned by London Free Press since 1971, CKNX is to continue to provide distinctive local service and advertising opportunities.

● **Colonial Broadcasting System Ltd.**—application denied for station at Corner Brook, Nfld. (10 kw on 850 kHz) as it would adversely affect Humber Valley group; "denial underlines responsibility of Humber Valley to maintain highest possible standard".

FM Radio

PRIVATE NEWS NET, 8 OTHERS APPROVED

Development of FM has now accelerated under the CRTC's FM Policy. As a result of hearings held between December and May, the following stations have been granted licences:

● **Canadian News Radio**, for a network of 11 all-news outlets in major English markets (see article in this issue of BET).

● **CFCN Calgary** (The Voice of The Prairies Ltd.), for 74,000 watts on 92.1 MHz. The application by Calgary Broadcasting (CFAC) was denied, and the CRTC invites further applications for an additional FM station in the city.

● **CFGM Broadcasting Ltd.**, for a station in Toronto. As the frequency requested, 99.1, was awarded to the all-news station, another frequency must be determined. Applications by Geoffrey Stirling, Peter Steinmetz, Richard Lafferty, Service Broadcasting and Neil Lundy were denied. Also denied was CHIN-FM's request for 107.1 with 40 kw; the CRTC noting that coverage had been substantially improved by transmission from the CN Tower.

● **Harvey Glatt**, representing a company to be incorporated, for an independent station in Ottawa on 106.1 MHz with 100 kw. An application by James F. Sward was denied.

● **CKAC Montreal**, for a French language station in Montreal. As the frequency of 93.5 has been awarded to CBM-FM, a suitable Class CI frequency is to be determined; also, it is a condition of licence that prime service be to Montreal Island. The applications of Claude Boulard and Gilles Talbot, Radio CHAR Inc., and Stereo Laval Inc. were denied.

● **Stephen Venne** for the Longueuil area, south of Montreal. In this instance also, a suitable Class CI frequency is to be determined. The application of Pierre Dulude was denied.

● **Colette Chabot** for St. Adele and the Laurentians area, north of Montreal. As use of the requested frequency, 99.5 MHz, would likely interfere with CINC-FM Montreal (7 watts on 99.3), CINC is to consult with the DOC regarding a possible change of frequency.

● **Island Radio Broadcasting Co.** (CKCW) for 103.9 MHz, with 24.6 kw ERP, at Moncton, N.B. The frequency originally requested, 95.7, has been requested by the CBC for future use.

● **Radio CJCH 920 Ltd.**, for 100.1 MHz, with 100 kw ERP, at Halifax, N.S.

FM stations licensed to the CBC include Chatham, Ont. (35.5 kw on 95.1) and Sarnia, Ont. (50 kw on 106.3). An application for a French station at Sarnia (3kw on 103.9) was withdrawn, as the signal of CBEF Windsor, Ont., has been improved in the area.

Approval was given to CBM-FM Montreal to change from 95.1 (a Class B frequency) to 93.5 MHz, with SCMO to provide an emergency AM program feed if required. A new CBC English station for Quebec City was approved (100 kw on 104.7) to carry AM network service. The CRTC suggests that AM service over CFOM Quebec also continue.

A power increase and change in transmitter site was approved for the CBC's CBUK-FM Kitimat, B.C.

At Vancouver, CHUM Western Ltd. was denied its bid for 94.5 MHz with 38 kw.

● A change of antenna site for newly-licensed CING-FM Burlington, Ont., will come before the Sept. 8 Ottawa hearing of the CRTC. The change would result in a significant increase in height above average terrain and is opposed by neighboring CHWO Oakville.

Television

PROGRESS AT CTV

The licence of the CTV Television Network has been renewed to Sept. 30, 1979. The CRTC noted that the network had spent nearly \$570,000 to develop new program ideas during 1973-75, with an increase of 29% in its Canadian production budget in 1974-75. While CTV is now available to over 90% of English-speaking Canadians, service is yet to be provided to areas such as Windsor and Sault Ste. Marie, Ont., and northern B.C.

* * *

● The purchase of **CKNY-TV North Bay** by Cambrian Broadcasting Ltd. (CKSO-TV Sudbury) has been approved.

● Low power rebroadcasters have been licensed for Wells-Barkerville (2 stations), Pearse Island, Puntzi Mtn., Tatla Lake and Anahim Lake, B.C., Strathcona Sound, NWT (2 stations), and Putunig (2 stations) and Camp LG3, Quebec. An FM station was also licensed for Camp LG3, 116 watts on 100.5 MHz.

● CBC low power rebroadcasters have been approved for 9 locations in Newfoundland.

● In renewing the licence of **CJOH-TV Ottawa**, the CRTC commended the station for its improved news and public affairs programming and contribution to the CTV network.

New Policy opens way for LOW-POWER REBROADCASTERS

In a statement issued July 13, 1976, the CRTC has cleared the way for extensive use of low-power FM rebroadcasters by privately-owned stations.

For many years, the CBC has employed 50-watt AM rebroadcasters, usually to fill in coverage in remote communities with reception problems. During 1974, the CRTC approved a number of private station rebroadcasters, most of them in British Columbia, on an experimental basis. After analyzing these operations, the Commission has concluded that further stations should be licensed in remote areas, where service is needed and cannot be provided by any other means.

The criteria are as follows:

- A. Only low-power rebroadcasters which carry the full schedule of the parent station are included in this category.
- B. The applicant must show that existing radio service is unsatisfactory, i.e., the community is not receiving at least two Canadian signals reliably both day and night. Reliable service is that within the 0.5 mV/m or nighttime limitation contour, unless the applicant can show that unusual local conditions interfere with normal reception.
- C. The applicant must demonstrate that the community cannot support a standard-parameter station; that it has some socio-economic connection with the community where the originating station is located; and that the proposed station will not be detrimental to any existing radio services.
- D. Frequency assignments will be on an unprotected basis, i.e., they may be changed to optimize the use of the spectrum.
- E. FM stations are to be used for this purpose, as they provide consistent coverage day and night, produce a better signal, and are less expensive. Also, fewer frequency changes will be necessary on FM. AM frequencies may be granted in exceptional cases, if it is demonstrated that an FM facility is impractical and, where nighttime operation is proposed, the nighttime limitation contour of the proposed station includes at least 90% of the homes in the 0.5 mV/m daytime contour.

To counter opposition to the use of FM frequencies for this purpose, the CRTC cites a September, 1975, survey on homes with FM receivers. It shows a national average of 79.7%, with individual provinces ranging from a low of 60.2% (PEI) to a high of 84.7% (Quebec). The lack of FM radios in cars was not considered significant, as driving time is minimal in the small communities where low-power rebroadcasters would be licensed.

FM SIGNALS ON CABLE TV

As many cable systems have discovered recently, the CRTC is no longer permitting the carriage of most distant FM stations.

The new rules were spelled out in a document issued July 19, 1976, entitled *Policy Regarding The Carriage on Cable Television of FM Signals*. The policy is tied to that on FM broadcasting, which has required all FM stations to adhere to a "Promise of Performance" involving a higher standard of programming within a specific format.

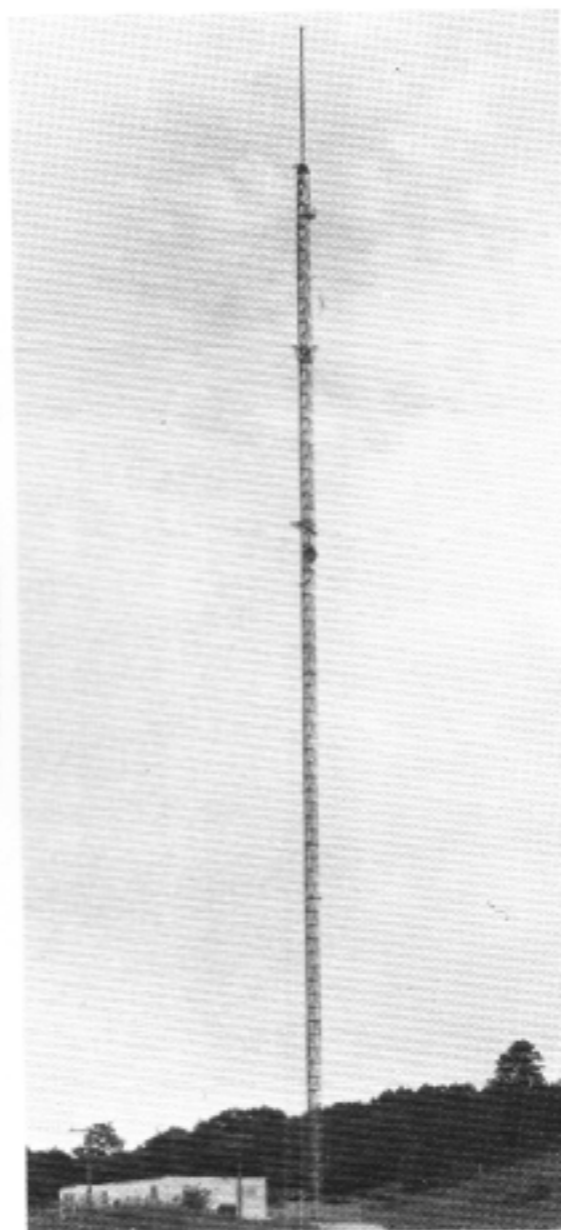
Cable systems must carry all local FM signals. They may also be required to carry certain regional stations (e.g., CBC). "Distant" Canadian stations may be carried only if their formats are not available on any local station; should a new local station go on the air with the same format as a distant station, the distant station must be dropped from the cable service, in favor of the local station. "Duplication of format", says the CRTC, "is both unnecessary and undesirable".

The Commission considers distant stations—particularly U.S. stations which are not subject to such requirements—a threat to the economic viability of Canadian FM stations, particularly during the critical initial stage of development of the FM Policy.

The policy statement of July 19 includes a definition of each format and a list of all privately-owned FM stations showing the format each adheres to under its "Promise of Performance".

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Cable Television

SASKATCHEWAN HEAD-END, SIX SYSTEMS APPROVED

The CRTC has approved systems in six communities in Saskatchewan—the last region in Canada where major centres had not yet been licensed for cable TV.

Also approved is a head-end at Outram, Sask., which will receive U.S. signals—initially KXMD-TV and KUMD-TV Williston, N.D.—to be distributed throughout the province. An alternate plan to feed signals from the head-end at Tolstoi, Manitoba, was rejected, along with the suggestion that CKND-TV Winnipeg be imported to provide a third Canadian signal for Saskatchewan.

Successful applicants are:

- Saskatoon Telecable Ltd., for Saskatoon;
- Prairie Co-Ax TV Ltd., for Moose Jaw and Bushell Park;
- Regina Cablevision Co-Operative, for Regina;
- The Battlefords Community Cablevision Co-Operative Limited for North Battleford, Battleford and the Saskatchewan hospital;
- Mankota Television Co-Operative Association Ltd., for the village of Mankota; and
- Eston CATV Co-Operative, for Eston.

Only three communities in the province—Estevan, Weyburn and Prince Albert—have cable systems at present.

The provincial government had campaigned for ownership of all cable TV systems by co-operatives or by Sask-Tel, the government telephone company, which would own the hardware. The CRTC rejected this position, insisting that its usual policy apply, i.e., ownership of local head-end, amplifiers and drops by licensees. Co-ops were dealt with "as with all applicants, on the merits of their individual applications".

In selecting the licensees, the CRTC gave priority to Saskatchewan residents, to counterbalance the "high level of absentee ownership and cross-ownership" of media in the province.

While conditions have been imposed on the cable systems to protect local television stations from loss of revenue, the bid of Provincial Cablevision Ltd., jointly-owned by the private TV stations, was turned down. Other unsuccessful bidders, besides Sask-Tel, include Agra Industries, A. Perry Foster, Regina Community Cable Services Ltd., David Conroy, the co-ops in Saskatoon and Moose Jaw, and J. Ronald Mitchell on behalf of a company to be incorporated.

It will be a condition of each licence that commercials be deleted from U.S. signals,

the costs to be shared by all cable and TV station licensees concerned.

All systems are to reserve channel space for educational programming. At the hearing on cable television for Saskatchewan, however, a representative of "Sask-Media", the Saskatchewan Educational Communication Corp., said that the province had no plans to own and operate its own educational TV stations.

* * *

● **Sturgeon Falls Cable TV Inc.** has been licensed to serve Sturgeon Falls, Espanola, Elliot Lake and Blind River, while Timmins Cable Services Ltd. will serve Hearst, Kapuskasing and Smooth Rock Falls, Ont. The systems will bring Global and TVA network service, as well as WGR-TV and WBEN-TV Buffalo, to the area.

● A licence has been issued to **J. A. Goddard**, representing a society to be incorporated, for a new system at Grand Forks, B.C. A planned management agreement with Okanagan Radio Ltd., licensee of CKGF, Grand Forks is to be submitted to the CRTC for approval. A competing application by Greenwood Video Ltd. was denied.

● **Charles A. Towriss** won a licence for the Hope, B.C., area; an application by Peter Koch was denied.

● The sale of 8 systems in B.C. and Alberta by North West Community Video and Express Cable Television Ltd., previously denied by the CRTC, has now been approved. The new owners, **Microwave Cablevision Ltd.**, submitted new financing plans and undertook improvements in community programming.

● Cable systems in southwestern B.C. are authorized to distribute **CKVU-TV** Vancouver on channel 13, and are to agree on a standardized new line-up for distribution of other channels.

● Systems owned by **Premier Cablevision Ltd.** in Vancouver, Victoria and Coquitlam, B.C., are to participate in a common head-end and centre for deletion of commercials from U.S. signals. But a requested rate increase to \$6.00 monthly to pay for it was cut back to \$5.75 by the CRTC, which said Premier had not justified the charges made to its subsidiaries for various administration services. The company was also told to substantially reduce inter-company loans. It was noted that Victoria Cablevision had begun to improve its community channel, assigning an operating budget of \$265,350 and capital budget of \$97,000 this year. A report is to be made by October 31, 1976, on plans for deletion and substitution by cable systems in the area, in co-operation with Vancouver TV stations.

● The addition of **KHQ-TV** Spokane to

Calgary's two cable systems has been approved.

● Distribution of taped stereo music—even with 30% Canadian content—has been denied Cablevision Lethbridge Ltd., as not conforming to the CRTC's policies.

● **Fernand Rondeau** has been licensed to operate a cable system at Ste-Emilie de l'Energie, Que.

● **Guy Charette** (Telecable Lac Carré Enrg.) has acquired the cable system at Lac Carré; while **G. Larocque** and **Guy Charette** (Telecable de l'Annonciation Enrg.) have acquired that at l'Annonciation, Que.

● **Norman MacDonald** has been licensed for a system at McAdam, N.B.

● In approving various amendments for City Cablevision Ltd., Fredericton, N.B., the CRTC has required the system to participate in the Chamcook head-end.

● The sale of Eastern Cablevision of Truro, N.S., to **Stuart P. Rath**, has been approved. The new owners are to upgrade the system technically and increase community programming.

● **Arno Hawboldt** has sold his cable system to Windsor (N.S.) Cable TV Ltd.

● An increase in installation and subscriber fees by **London Cable TV** has been approved, despite a court battle by the Canadian Association of Consumers. CAC challenged the increase, and a supporting decision last April 9 by the Federal Court of Appeal forced the CRTC to reconsider the matter and make public certain financial information. The commission has now ruled that the increase—to \$5.50 monthly, \$6.00 with augmented service (excluding converter)—is justified. Increases collected during the dispute were placed in a trust fund, and the CRTC has directed London Cable to return this money to subscribers. Various other requests by the licensee were approved, including a second head-end and mute carrier on channel C. Addition of a third CBS affiliate was denied.

● **Fergus—Elora Cable T.V. Ltd.** has been permitted to continue accepting advertising on the community channel. It is restricted to spots for local businesses, for the duration of the present licence period. A similar request by **Fred Lang T.V. Ltd.** of Kirkland Lake, Ont., was denied.

PAY TV DEADLINE NOW OCTOBER 1

The time limit for filing submissions on the development of pay TV has been extended from September 1 to October 1.

A subsequent hearing of the CRTC will then determine the form and function of an agency "to assemble, produce and acquire programming". The agency would provide programming for all pay TV operations to be licensed at a future date.