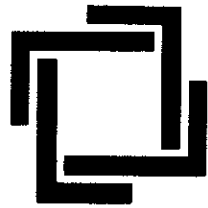


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TASK REPORT NUMBER ONE
OF A STUDY AND REVIEW OF
TECHNICAL ASPECTS OF SCRAMBLED
TV SERVICES
BY DIRECT BROADCAST SATELLITE
PHASE II
"STUDY OF TECHNICAL ASPECTS OF
AUDIO-ONLY SCRAMBLING"

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by

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FINAL REPORT TASK I
"STUDY OF THE TECHNICAL ASPECTS OF
AUDIO-ONLY SCRAMBLING "

1. INTRODUCTION

As a part of a contract recently carried out by this Company⁽¹⁾, one of the conclusions drawn was that "--- it is quite possible that the optimum current solution for DBS scrambling of Pay TV movies will be hard encryption of the audio carrier only". This conclusion, among others, lead to additional work being carried out on the technical aspects of scrambled TV services by direct broadcast satellite. This report marks the conclusion of Task One of that additional work, being "A Study of the Technical Aspects of Audio-only Scrambling".

2. STATEMENT OF WORK AND OBJECTIVE

DSS Contract No. OST 81-00251 gives the following objective in the statement of work for Task One: "To ascertain the current status of development of audio-only scrambling with emphasis on the state of LSI and likely marketing time scales and retail costs. In addition to investigate the likely impact of audio-only Pay-TV scrambling on copyright fees".

3. APPROACH

The approach taken to meet the objective given above was to divide the work into two parts, the first being concerned with the technical aspects, and the second with the copyright aspects of this task.

The approach used for the first part of the work was first to ascertain the companies or company carrying out development work on hard encryption of the audio carrier only. An operational specification for audio-only television scrambling systems for use with a Canadian direct broadcast satellite, based on the requirements identified in Footnote 1, was then devised.

As it was found that only one company, "SATCOM", was currently engaged in this work, this company was

(1) The Final Report of the Study of the Technical and Economic Consequences of Scrambled TV Services Offered by Direct Broadcast Satellites - February 1982.

visited and their work discussed in depth. An analysis was then made against the operational specification and conclusions drawn as to the likely exceptability of the system. In addition, an investigation and analysis of the general capability of SATCOM was carried out.

The second portion of the work, that relating to copyright, was carried out through a series of interviews with key people in the field. These included senior staff of CAB, CCTA, the CRTC and the Department of Corporate and Consumer Affairs. In addition, considerable research was carried out into methodology of copyright as it pertains to various media in Canada. An analysis was then made of the most likely methodology for Pay-TV copyright, with or without audio-only scrambling.

From this work, conclusions and recommendations were drawn.

4. PROPOSED OPERATIONAL SPECIFICATIONS FOR
"AUDIO-ONLY" TELEVISION SCRAMBLING SYSTEMS FOR
USE WITH A CANADIAN DIRECT BROADCAST SATELLITE

Using as a basis the work carried out in Phase 1 of this project, the following operational specification was devised. It will be appreciated that at this stage the specification must be written in conceptual form rather than to absolute limits. The first five parameters are considered to be key requirements, with the next two being very important.

4.1 Degree of Security

For audio-only scrambling the degree of security should be very high. It is envisaged that the audio sub-carrier will be digitized and encrypted. The encryption system should embrace the addressing, keying and tiering signals as well as the audio information itself. Preferably the encryption system should make use of keys based on "one way functions" and should be variable from time to time.

The decoder unit should also have a high level of physical security with much of the encryption being built in at the crystal level and the chip should be physically manufactured so that it is difficult or impossible to read electronically.

This is considered a key requirement.

4.2 Degree of Restoration

This is defined as the quality of the overall television signal, including both video and audio, obtainable after descrambling or decoding.

This is considered to be a key requirement. It should be borne in mind that all encoding will degrade a quality of a television signal from that achieved prior to coding. At the same time, by definition, the signal is one which has a direct value to the viewer in-so-much that he is paying cash for it, and is therefore normally expected to be of the highest technical quality.

These two requirements mean that:

- a) the input signal must be of the highest quality
- b) the scrambling/descrambling process should not degrade the input signal to a point where the degradation is annoying to the subscriber.

Thus the specification for this parameter is taken as the signal quality delivered to the subscriber shall be of an impairment grade of four or better, where impairment grade four is defined as "perceivable but not annoying". (2)

4.3 Residual Intelligibility

For an audio-only scrambling system the residual intelligibility of the audio in the scrambled state should essentially be zero. Again this is considered a key requirement. Any impact on the video signal in the scrambled state is immaterial, although it would be preferable that interference is zero or minimal so that the video signal can act as a "barker channel".

4.4 Effects of Redistribution

Although a Direct Broadcast Satellite system is frequently considered to be a "direct-to-home" system where the ROSES is situated at the subscriber's residence

(2) As defined in Broadcast Procedure 23:

<u>Impairment grade</u>	<u>Impairment</u>
5	imperceivable
4	perceivable but not annoying
3	somewhat annoying
2	severely annoying
1	signal unusable

or office, in practice a considerable portion of subscribers are likely to receive the signal via a cable television system, a rebroadcast transmitter, a multiple distribution system or other terrestrial distribution network.

This being so, it is important that the ease with which any specific scrambling system can be distributed by one or more of these terrestrial distribution networks be considered.

For this parameter it is specified that the scrambling system can be used on a normally loaded cable television network without causing unacceptable interference to other channels, or for some other reason requires descrambling and rescrumbling.

Because of the likely use of redistribution systems with a DBS, this is once more considered to be a key requirement.

4.5 Decoder Costs

The retail cost of the decoder is considered to be a key parameter in the development of a successful DBS scrambling system, and should not exceed \$100 Canadian in 1982 dollars.

4.6 Ease of Multi-Channel Scrambling or "Tiering"

Preferably the audio-only scrambling system shall have the capability of accepting tiering information to permit a minimum of 5 tiers of services. An important requirement.

4.7 Addressability

Preferably the audio-only scrambling system shall have the capability of individual subscriber addressing up to at least one million subscribers with a reasonable access time. An important requirement.

4.8 Conformity to Current Standards, Regulations and Policies

In broad terms all services, including scrambling services, provided by a DBS will fall under either one or both of the Broadcast or Radio Acts.

Again in broad terms the Radio Act is the jurisdiction of the Department of Communications whilst the Broadcast Act is the responsibility of the Canadian Radio-television and Telecommunications Commission (CRTC).

Both of these organizations publish regulations and policies, in some cases backed up by standards.

The decoding requirement being considered under this paragraph is the degree of conformity with current, or in some cases likely future, regulations, policies or standards propagated by these two organizations.

4.9 Reliability

Reliability in this context is taken to be the electronic reliability of the components of the decoder when operating with normal domestic and office power sources. As in both public and private service the decoders are required to operate in conjunction with domestic television sets, the required reliability norm has been taken as equivalent to a "top of the line" domestic television receiver.

4.10 Environmental Conditions

The environmental conditions are defined as those of an active home environment. The assumption is made that the decoder is a separate box from the television set and must therefore be robust enough to withstand normal abuse from children, dogs, cups of coffee, etc. On the other hand temperature will usually be kept within 10°C to 30°C. Relative humidity will range from 30% to 90%.

4.11 Size

While in most cases it is envisaged that the size of the decoder will be a lot less than the maximum acceptable size, the maximum is taken as 8 cm high and the approximate cross section of a domestic TV set. In this case, the TV set would sit on top of the decoder. The maximum size is therefore taken as 25 cm X 15 cm X 8 cm.

4.12 Encoder Costs

In specifying the overall costs of any scrambling/descrambling system the one time cost of the encoder must be taken into account. While it is appreciated

that this is not strictly a decoder requirement it is a consideration in the selection of the overall system.

The selection of a limit in this case is to a large extent arbitrary, and has been set at \$25,000.

5. AN ANALYSIS AGAINST THE OPERATIONAL SPECIFICATION OF THE AUDIO-ONLY SCRAMBLING SYSTEM CURRENTLY BEING DEVELOPED BY SATCOM INCORPORATED

A review of the literature, together with checks with industry contacts, revealed only one company currently developing an audio-only DBS scrambling system.

Despite this current lack of publicity, other companies may well be developing such systems, and the situation will be continued to be monitored under Task 2 of this contract.

The company currently developing an audio-only DBS scrambling system is :

SATCOM Incorporated
1756/E Junction Avenue
San José, California 95112
U.S.A.

A visit was made to this company, and the president, Dr. Bernard Jacobs, was interviewed in-depth regarding SATCOM's plans for audio-only DBS scrambling systems.

For ease of presentation, information gained regarding compliance or otherwise with the operational specifications defined in para 4 above will first be given against the headings identified in that specification. Additional information regarding the scrambling system and the plans for SATCOM will then be presented.

5.1 Degree of Security

The proposed audio-only scrambler (AOS) will extract the audio carrier from the NTSC signal, sample and digitize it, add addressing and tiering information, encrypt the bit stream and add a variable key. A unique, non-vertical interval, coding system will be used. Due to patent considerations, Dr. Jacobs declined to expand on this point of the design.

A dedicated LSI which would include fusible links to the ROM would be designed and manufactured. The variable key would be capable of being refurbished every minute.

From this information, it is concluded that the AOS will fully meet the "degree of security" requirement.

5.2 Degree of Restoration

The AOS is capable of transmitting a 15 KHz audio bandwidth with a very high regenerated signal-to-noise ratio.

Again, the system as described, would fully meet the degree of restoration operational specification.

5.3 Residual Intelligibility

With the encoding and encryption techniques described, a zero level of residual intelligibility can be expected. This parameter is therefore fully met.

5.4 Effects of Redistribution

As the method of transmitting the digital bit stream within the NTSC signal is not specified, nor is its bit rate, no assessment can be made of the degree of transparency of a normal cable television distribution system to such a signal. Bearing in mind the fact that a number of problems have been encountered with the distribution of Telidon signals over cable television systems, this is a matter on which further work must be carried out once pre-production models of the AOS are available.

5.5 Decoder Costs

The planned retail cost of the complete descrambler is \$50 U.S. in reasonable quantity. Using a 20% exchange rate, this would make the retail cost in Canada \$60, well within the proposed limit.

5.6 Ease of Multichannel Scrambling or "Tiering"

Tiering capability of 10 to 15 tiers will be incorporated in the coding system, thus meeting the operational requirement.

5.7 Addressability

The system is designed to permit individual addressing of approximately two million subscribers. It thus meets planned requirements.

5.8 Conformity to Current Standards, Regulations and Policies

It is understood that the transmitted spectrum will lay completely within that defined for the NTSC television signal and, as such, should not cause extraneous emissions. This, together with the other information gained, would lead to the initial conclusion that the SATCOM AOS system is unlikely to conflict with current DOC policies and regulations. Assuming that the CRTC permits any type of scrambling to be used in conjunction with a direct broadcast system, it would not conflict with current CRTC requirements. The situation is, however, a fluid one. From the equipment viewpoint, no final comment can be made until the production hardware is evaluated, and this should be done against the policies and regulations in force at that time as, again, these are in a state of change.

5.9 Reliability

As a dedicated chip will be used, produced in very large quantity and encapsulated, the reliability can be expected to be high.

5.10 Environmental Conditions

The environmental conditions for which the equipment is designed, precisely meet those specified.

5.11 Size

The planned size of the decoder unit is expected to be approximately 15cm by 8cm by 6cm, thus being well within the recommended specification.

5.12 Encoder Costs

The expected encoder cost is \$8,000 U.S. or approximately \$9,600 Canadian, again well within the somewhat arbitrary figure proposed.

The AOS system is currently at the breadboard stage, with the design of the LSI nearing completion. It is expected that the first samples from the pre-production run will be available for trial by November 1982. Full production should commence early in 1983.

SATCOM has cross-linking directorates with an LSI design and production house, and thus can ensure that there are no production delays due to LSI delivery priorities.

Dr. Jacobs is convinced that audio-only scrambling is the optimum method of scrambling for Pay-TV, both for direct broadcast satellites and for other distribution systems. At the time of the meeting with SATCOM (early March 1982), negotiations were taking place between SATCOM and Premier Alberta Television Limited, a Canadian Pay-TV licence applicant, for a possible joint venture involving the supply of SATCOM AOS equipment to this potential Canadian licensee. Since that time, the CRTC decision on Pay TV licences has been made and Premier Alberta Television Limited's application denied. Notwithstanding this, it is felt quite likely that SATCOM would approach one or more of the successful licensees, either for sales or for a joint venture project.

In summary, it can be said that SATCOM is a dynamic, small entrepreneurial organization that is convinced that audio-only scrambling is the optimum scrambling method for DBS systems. It is extremely active in this field, in the field of an interim line manipulation scrambling system, and in the field of design and production of low-cost TVROs. While the impression was gained of a progressive, high-technology organization with a reasonable amount of vertical integration, it was not possible to form any opinion of its financial backing or security. As small, expanding companies are most vulnerable to capitalization and cash flow problems in the current economic situation, this should be borne in mind in any evaluation of the company. Further information on SATCOM is given in Section 6 below.

6. AN EVALUATION OF THE DEVELOPMENT AND PRODUCTION FACILITIES OF SATCOM INCORPORATED

SATCOM's facilities are located in a modern, light industry industrial park on the edge of San José, California. They comprise an estimated 30,000 to 40,000 square feet of single story, high quality, factory facility, of which approximately 3,000 square feet is

allocated to office facilities and the remainder being devoted to R and D and production facilities in the ratio of approximately 1:4.

The staff appeared to be comparatively small but very highly qualified.

The majority of the plant is currently devoted to the design, development and manufacture of 4 GHz and 6 GHz TVROs. There are apparently already markets for this equipment in Canada, the United Kingdom and Norway. The main production is for 12 GHz complete receivers with 1 metre dishes which would sell for approximately \$560 U.S. in large quantities. The system would comprise the dish, LNA and receiver, but would not include a decoder. Production is planned to increase to 1,000 per month by mid-summer.

4 GHz receivers (without the dish) with a 110° LNA with a microwave integrated circuit are in production and sell for \$750 U.S.

In pre-production is a pseudo-random line swapping video scrambling system that is expected to be in production by mid-summer and sell for \$140 U.S. A demonstration model of this system was available and appeared to be quite effective. The system permitted frequent code changes of the pseudo-random line inversion and would also permit pay-per-view by the use of a magnetized card that could be purchased for a fixed value of viewing.

The first pre-production run is expected to be available by mid April.

The company also planned to introduce low-power TV re-broadcast transmitters in the near future.

The company is extremely dynamic with a comparatively broad product range for its size and could well develop into a major supplier. The milieu is, however, a very competitive one and much will depend upon the strengths of its backing and finances.

7. COPYRIGHT AND AUDIO-ONLY SCRAMBLING ON DBS

The information given in this section, and in Section 8 below, was gained from a detailed review of the current literature on the Copyright Act and how it pertains to broadcasting, cable television, radio communications and satellite communications. In addition, in-depth

interviews were carried out with the following key personnel of organizations concerned with these fields:

- . Mr. Bruce Couchman, Copyright Law Revision Team, Department of Corporate and Consumer Affairs
- . Mr. William Howard, Legal Branch, CRTC
- . Mr. Michael Hind-Smith, President, Canadian Cable Television Association and member CCTA Copyright Committee
- . Mr. Wayne Stacey, Executive Director, Canadian Association of Broadcasters.

It should be noted that the Department of Communications itself has established a task force on copyright law and cultural matters. This task force is headed by Mr. John Hylton, Q.C., with Mr. A.A. Keyes, Director of Copyright, Arts and Culture Branch, as Executive Secretary. It was not felt appropriate, within this task, to interview members of the DOC Copyright Law and Related Cultural Matters Task Force, as information from this group, including confidential policy matters, would be readily, and directly available to the Scientific Authority. Such information should, however, be taken into account in any overall review of copyright problems pertaining to DBS scrambled services.

The most immediate and common input received from all of the above sources is that the current copyright situation, as it pertains to broadcasting, radio communication as a whole, and direct broadcast satellites in particular, is confused, extremely complex, and subject to a number of conflicting interpretations.

Copyright in general in Canada is controlled by the Copyright Act of 1924. As such, the act predates most of the electronic media technology that it is currently being used to control. Indeed, the only reference to electronic media (3) refers to "in case of any literary, dramatic, musical or artistic work, to communicate such work by radio communication".

(3) Copyright Act RS, c55, s.1., clause 3 (1) (f).

Even this statement is the subject of considerable contention, specifically as to the meaning of the radio communication.

This in itself has been the subject of at least one court case (2).

In this case CTV had arranged for signals to be transmitted via Bell land line and microwave from Toronto studios to independently operated local stations across Canada so that certain musical work in which the plaintiff held copyright could be rebroadcast by those local stations. The local broadcast stations had been licensed by the plaintiff, who was suing CTV for copyright infringement in connection with the microwave portion of the transmission pursuant to Section 3 (4) (f) of the Copyright Act. The action was dismissed, as was the appeal to the Supreme Court of Canada, on the basis that, "Radio transmission of a microwave signal may be part of the process of communication of a musical work by radio communication: it is not, however, taken by itself, communication of the musical work." Programs can be, and are, delivered to local stations by physical delivery of a record or tape, by wire, or by microwave.

From this it may be concluded that it is likely that copyright authority would not be required for DBS transmissions to ground stations that feed broadcast, or rebroadcast transmitters.

It is generally accepted that where a public performance is involved, such as the broadcast of a performance for general reception, the broadcaster would require the permission of the copyright owner. However, in this case, copyright would only be required for material in a permanent form. This would include all films, video tapes, audio tapes, etc., including clippings and background drops, etc., but specifically excluding live performances.

Thus it may be concluded that it is likely that copyright authority would be required for at least unscrambled DBS transmissions over a satellite received in a "direct-to-home" mode.

The situation with regard to any type of scrambled signal is far less clear and far more contentious.

(4) CAPAC v. CTV Television Network Limited and Bell Canada, (1966) Ex. C.R. 872; aff'd (1968) S.C.R. 676.

There are basically two legal arguments here.

The first takes the position that any manipulation of the signal, such as scrambling, is just another part of the overall electronic manipulation of the performance. With any electronic distribution the performance cannot be seen or heard without the relevant apparatus to make it available to the viewer or listener. Therefore scrambling cannot be considered to make a public performance into a private performance, the latter not being subject to copyright.

The opposing argument is that any normal unscrambled electronic transmission is carried out with the intent of making the performance available to a viewer or listener. When the performance is broadcast, this viewer or listener may be any member of the public who has purchased the relevant equipment without restriction. When the signal is scrambled this is done with the specific intent of restricting the reception of the performance to those who have paid a specific fee for the performance. As such it is not a public performance. An additional argument against a scrambled signal being considered to be a public performance is that such a signal can be considered to be coded or enciphered, thus unintelligible to the viewer or listener. As such the viewer or listener is not in receipt of the performance and therefore copyright charges are not applicable.

All authorities interviewed stressed that these opposing views have not yet been taken to court and all declined to give a firm opinion as to the likely decision in the event that a case were taken to court.

In view of this, no conclusion can be drawn as to whether or not a scrambled signal transmitted by a DBS for direct-to-home use would be subject to copyright charges.

All experts interviewed were, however, unanimous in their opinion that the method of scrambling would be immaterial to such a decision. Once more the concept of "intent" was brought up. It was felt that if equipment specifically dedicated to scrambling and descrambling was used on the system, the intent of such scrambling would be proven regardless of the methodology providing that "expert technical opinion" supported the contention that the equipment was competently and effectively designed to fulfill the scrambling requirement.

It can therefore be said with reasonable confidence that the situation with audio-only scrambling would be no different to that with any other form of scrambling.

It will be noted that in the above dissertations, nothing has so far been discussed on the matter of reception of a broadcast signal from a DBS with subsequent redistribution by a cable television system. This is a specific case in which it has been legally found that distribution via a cable television network to individual subscribers does not constitute a public performance and is thus not subject to copyright.

In the case in question (5), the plaintiff, Canadian Admiral Corporation Limited, obtained certain exclusive television rights for the Montreal Allouette games and arranged with the CBC on an exclusive basis to telecast the home games live in Montreal, and also to broadcast in Montreal, from films provided to the CBC by the plaintiff, the games played away from home by the Allouettes. As to the films of out-of-town games, the plaintiff had contracted for "the exclusive right to distribute and perform the television broadcasts of such films after receiving the same through the ether, by wire service or rediffusion". The plaintiff had registered copyright in both the live telecasts and the film telecasts.

The live telecasts were not produced from film, nor were films taken at the home games by the plaintiff. No record remained after the live telecasts.

Despite specific advance warning from the plaintiff's solicitors that it not do so, the defendant picked up the CBC's broadcasts off-air at its head-end and relayed or "rediffused" the telecasts to paying subscribers by wire and to a similar terminal unit in its public showroom in Montreal. The terminal units were leased by the defendant to its subscribers.

The plaintiff sued for copyright infringement.

It was held that the only extent of copyright infringement was with respect to the display of the film telecast in the public showroom. Among other points of justification of this decision, it was stated specifically that "there is no infringement of s.3 (1) (f)

(5) Canadian Admiral Corporation Ltd. v. Rediffusion Inc., (1954) Ex. C.R. 382.

of the Copyright Act because transmission by coaxial cable is not radio communication.

It is considered likely therefore that any signal, unscrambled or not, transmitted via a DBS, received by a cable TV company, and further distributed by a cable television system would not be subject to copyright.

8. COPYRIGHT ACT REVISION

As can be seen by the foregoing, the Copyright Act, although it has been amended several times, has not been substantially revised since its adoption in 1924. It is therefore in many ways inappropriate to today's society. The Act has been administered for a number of years by Corporate and Consumer Affairs Canada, which has been conducting considerable research into copyright law.

On the 16th of July, 1981, Mr. Ouellett, Minister of Corporate and Consumer Affairs, and Mr. Francis Fox, Minister of Communications, issued a joint release stating that officials of the two Departments would work closely together to prepare legislative proposals to revise Canada's Copyright Act within the next twelve months.

These revisions are now in progress and proposals will be submitted to cabinet in July of this year (1982). After Cabinet approval, or modification of these proposals, it is expected that it will only take a few months to draft a new law. Information has been received that there will probably be a strong push for this legislation to go before the House prior to the next election.

It is expected that the new proposals would make clear the difference between point-to-point radio communications and broadcast communications, including broadcast communications on satellite. Other proposed changes affecting satellites, scrambling and cable television are still being debated and therefore are confidential. It is likely, however, that the latest position on these matters can be obtained from Mr. A.A. Keys, Executive Secretary of the Department of Communications' Task Force on Copyright Law and Related Cultural Matters.

The general impression was received that although the revised copyright law is likely to overcome some of the uncertainties with regard to copyright and scrambled DBS services, it is unlikely that it will be specific enough to resolve all problems currently identified.

9. CURRENT TV AND RADIO COPYRIGHT MECHANISMS

To assist in putting the foregoing two sections in context, it was considered appropriate to outline the current mechanisms used to collect copyright fees for radio and television performances.

The mechanisms are different for radio and television and also vary to some extent between those in place for the private broadcasters and those negotiated by CBC.

The radio copyright fees for all private broadcasters, are negotiated by the Canadian Association of Broadcasters, with the two authorized rights authorities, CAPAC and POCAM. A percentage of the gross revenue of the radio station is paid to these authorities on a flat fee basis for the copyright of all music and all performances used by the radio station. The two organizations then split these fees and pay them to performers in this and other countries. There is no payment on an individual basis for particular pieces of music or other performances.

The CBC has a separate agreement with CAPAC and POCAM on a per capita basis of the population of Canada, as its mandate is to serve all Canadians. Once more, a flat fee is paid for all performances of any piece of music or other audio performance. The CBC has negotiated a similar agreement, on a similar basis, with the copyright holders of its TV programming.

Private TV stations negotiate individually with the copyright holders of the programming used for a rate card. In other words, the copyright paid would be more for a prime time showing than for a non prime time showing. However, once more the flat fee is related to the gross revenue as determined by the rate card.

As Pay-TV is not yet in existence in Canada, copyright fees have yet to be negotiated. However, the authorities with whom this was discussed were unanimous in their opinion that it was very likely that it would be on a similar basis to radio, i.e. some form of gross revenue basis. It was felt that a distinction between audio-only scrambling and any other form of scrambling would not, therefore, arise as gross revenue would obviously be tied solely to a Pay-TV licensee's subscriber base.

The Department of Corporate and Consumer Affairs operates a Copyright Tribunal. This is a body which arbitrates between CAPAC/POCAM and the radio and TV broadcasters when this is necessary.

In any consideration of copyright, it is necessary to distinguish between the licensing of programming and copyright. A licensing package is an agreement between parties to license the overall showing of a program and will contain many things in addition to copyright approval. Copyright is usually embedded in the licensing package but covers only the legal statute covering intellectual property. Copyright is usually only one or two per cent of the overall licence fee. The remainder goes to the owners of the movie or other programming for the overall use of the program itself. Licensing agreements are agreements between two companies and as such are covered by laws pertaining to such agreements rather than copyright laws.

10. CONCLUSIONS

10.1 Technical Aspects of Audio-Only Scrambling

From the work carried out in this task, it is concluded that there is a high probability of effective, inexpensive, audio-only scrambling system being available in large quantities by spring 1983. This OAS system is likely to meet the majority, if not all, of the parameters specified for these devices.

It is also considered likely that SATCOM, the manufacturer, would be agreeable to such devices being made in Canada under licence.

10.2 Copyright Aspects of Audio-Only Scrambling

The copyright situation with regard to programming distributed by direct broadcast satellite is complex and confused. The Copyright Act is currently being revised and proposals are expected to be presented to Cabinet in July 1982. The conclusions given below are therefore tentative and based on previous legal decisions and upon the opinions of the authorities working on the broadcasting aspects of the Copyright Act. With these

provisos, the following conclusions were drawn:

- . That for transmissions via a DBS to ground stations that feed broadcast or rebroadcast transmitters, copyright authority will not be required.
- . That copyright authority would be required for at least unscrambled DBS transmissions received in a "direct-to-home" mode.
- . The requirement for copyright authority for scrambled signals is unclear and undefined at this time. No conclusions can be drawn as to whether copyright payments will be required for such signals.
- . The method of scrambling would not affect in any way whether or not copyright fees would be required, or if required, the level of the fee.
- . That DBS signals received by cable television companies and redistributed would not be subject to copyright. The terrestrial broadcasting of a signal received from a DBS would require copyright payment.
- . A new Copyright Act that may modify any or all of these conclusions is likely to be enacted in the near future.

11. RECOMMENDATIONS

Based on the above conclusions, it is recommended that audio-only scrambling be considered a prime candidate for Pay-TV scrambling systems in Canada.

It is further recommended that the situation regarding the availability of hardware, the possible licensing of such hardware for manufacture in Canada, and the status of the Copyright Act as it pertains to scrambled DBS systems, be monitored as part of Task 2 of this contract.

* * *