Southern Cross Space & Communications Pty Ltd

Response to DCITA Issues Paper

“INTRODUCTION OF DIGITAL RADIO”

May 1, 2005

TABLE OF CONTENTS:

1.0 Introduction and Executive Summary

Southern Cross Space & Communications Pty Ltd (Southern Cross) is pleased to submit comments to DCITA's issues and policy document entitled, "Introduction of Digital Radio." That document (the issues paper) was made public in December 2004.

Southern Cross, founded in 2003 in Queensland, Australia is a consulting and engineering firm providing a wide range of space and telecommunications design services to our clients in Australia and internationally. In addition, the company reviews and assesses new business and technology opportunities for clients in the space sector. Members of the Southern Cross staff have had an active interest in the market and technology associated with Satellite Digital Sound Broadcasting (S-DSB) for more than two years[1]. The paper cited, while now more than two years old, is still most relevant to these proceedings. The concept presented develops a novel method for providing a satellite-based digital audio service for all Australians and addresses key issues associated with the formation of a business entity in Australia that could provide traditional as well as new services while identifying critical ownership and competition issues. Key findings derived from the paper and presentation will be re-introduced into these comments.

Southern Cross clients have included both satellite service providers and commercial spacecraft developers in Australia, the United States, Canada, the United Kingdom and the European Union. The Southern Cross staff has been actively involved in frequency regulatory proceedings associated with space services for the past twenty-five years. Mr. King, the company CEO was a member of the United States delegation to the 1987 Mobile WARC in Geneva. This is, however, the first time Southern Cross has participated in a DCITA issue paper comment cycle.

While our primary focus is the provision of digital radio services to Australians via satellite, we believe the issues brought to light by this document; even many directed toward terrestrial service providers, will eventually become relevant to S-DSB. Thus, Southern Cross would like to comment here on all aspects of the issues paper, including Parts A, B and C.

Southern Cross has identified a number of key policy points we believe are fundamental and should guide Australian policy makers as rules are adopted and frequency allocations are considered for digital radio introduction. These include:

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[1] See paper co-authored by J.A.King; ref: Jones, B.R., King, J. A., *"A Novel Approach to Satellite Digital Audio Broadcasting for Australia,"* Proceedings of the 7th Australian Space Development Conference, July 15-17, 2002. Paper available upon request from jking@scspace.com.

a. All Australians, including citizens living in rural and remote locations should have equal access to the many benefits of digital radio broadcasting. AND, this aspiration is justifiable, given the current availability of (and easy access to) state-of-the art digital radio technology.

b. Australians will benefit most from the diversity of information and entertainment services that can be provided by digital radio in all it's forms, including transmissions delivered by both terrestrial and satellite systems. Both service categories (using ITU terminology) can not only co-exist, but can support and benefit from one another. This has clearly been demonstrated in other countries.

c. It is true that traditional analog broadcasters have a large investment in the existing broadcast infrastructure. They, indeed, should have the opportunity to participate fully in the new digital broadcast environment, particularly if they are compelled to adopt digital technology as a part of a Full Conversion or Managed Introduction process. However, it is equally important that innovative new products and services, enabled by digital radio (and frequently by new and innovative companies) be supported and encouraged by the policies adopted to guide the introduction of digital radio.

d. The public interest will best be served when competition is present in the provision of all types of digital radio services. Policy should be established and rules should be adopted that allow equal opportunity access for all categories and classes of service providers. Preferential treatment of one class of provider or company, in deference to any other will not only discourage new and innovative services, it may deny their introduction into Australia entirely. Protecting the status quo, by denying access to the market by new providers, is also the best way to assure stagnation and obsolescence in our broadcast industry.

e. Other countries will not stop developing products and services (which can eventually flood this new Australian market with foreign goods) while Australia waits five years and holds back its new equipment and new digital radio service providers. Policy should be developed that finds means to assure access to the market by traditional broadcasters WITHOUT penalizing the entire remainder of the digital radio community. Australian equipment manufacturers and potential new service providers need all the help they can get, when competing against foreign technologies, service concepts and data system standards. Australian policy should REDUCE barriers for the entry of new broadcasters and the equipment suppliers that will support them. It should not attempt to hold them back. A better balance than that proposed by the Government must be found. The current policy approach, will certainly assure the public in five years time, that the phrase "BUY AUSTRALIAN" is hollow indeed.

f. DCITA, ACA and ABA should coordinate terrestrial and satellite services in such a manner that the spectrum resource is reasonably divided between the two categories of service. This alignment, should first and foremost, support Australian needs (considering both new and traditional service offerings) but, should also consider ITU-R international L-band frequency allocations. These should be consistent with the existing BSS (S) satellite and complementary terrestrial broadcasting allocations in the frequency band 1452-1492 MHz.

g. Australia should pay close attention to lessons learned and progress made in other parts of the world where digital radio has already been adopted and has a foothold. This offshore "data base", once adjusted to take into consideration potentially unique Australian requirements, needs and tastes, can provide valuable insight and should be considered carefully in forming our policies and rules.

h. The traditional AM and FM radio bands are, and will remain for many years to come, an extraordinarily valuable resource to the Australian public. It is true that the equipment employed by the AM and FM broadcasters are not state-of-the-art technology, none-the-less they have an almost incalculable value to us all and in a multitude of ways. Even considering the extreme value of the radio spectrum and the potential for re-allocation of these bands to other critical services (someday), we see no compelling reason for terminating the existing broadcast infrastructure, simply because digital radio has emerged. We believe it is better to consider digital radio as a new frontier, much as FM was upon it's introduction. It should be noted that AM services were not terminated because of the introduction of FM. Indeed, the character of the AM market has changed, but AM survives and has its constituency and it has unique propagation characteristics. Some traditional broadcast functions can and will cross over into the digital domain, however, we believe this should be primarily left to market pressures. In summary, the AM and FM allocations should stay. To use an old American adage, "If it ain't broke, don't fix it."

While the above policy points may not be universally accepted by all participants to this public process, the specific comments of Southern Cross to the issues paper will repeatedly refer back to them.

2.0 Response to the Issues Paper

"Introduction of Digital Radio," released in December of 2004 contains a set of broad policy statements and questions intended to guide public comment related

to the introduction of digital radio into Australia. The document includes policy principles, a future work program, and three parts: Part A, covering "Threshold Issues for Digital Radio", Part B, covering "Regulatory Issues", and Part C, covering "Digital Audio Service". Parts A and B are intended to cover policy issues pertaining to services that are broadly comparable in characteristics to existing terrestrial analog radio services. Part C discusses policy issues relevant to the potential introduction of new radio services, which have different characteristics than existing terrestrial analog radio services. Southern Cross comments will address all of these areas.

2.1 Policy Principles (Introduction, Digital Radio Study Group)

Southern Cross finds it can agree with the spirit of the policy issues introduced by the Government and summarized in the introduction of the issues paper. It must be noted, however, that some of the principles expressed are not necessarily mutually consistent with one another and it will be necessary for policy makers to harmonize these policy principles. For instance, the Government has recognized the importance of incumbent broadcasters (and has commits to a 5 year moratorium on the issuance of "new license area planned commercial digital radio licenses"). This policy is not necessarily consistent with two of the other stated policy principles, to wit"

- "The Government is committed to ensuring that all Australians, regardless of where they live, have access to the best radio services possible." AND

- "It is important that the development of new services is encouraged."

It is difficult to imagine that a five-year moratorium can serve either the interests of rural and remote Australians or new innovative services. For that to be so, all of the innovation and expansion of broadcasting into the new digital domain would have to come from the incumbents. Southern Cross finds no particular rational or motivation for the incumbents to make this kind of essential investment during most or all of this moratorium period. As we noted in our *principle point e*. above, a moratorium is a very poor means for the incumbent broadcasters to achieve their ends if there is a genuine interest in this new medium.

In the issues paper at page 3, one of the directives of the DRSG has been:

- The implementation of the alternative technologies, including Eureka 147,…"

It is always tempting to suggest, given the rapid advancement of telecommunications technology, that technologies like Eureka 147 have been

overcome by events and that newer available technologies are more attractive. One must, however, be sensitive to the investment that has been made in trials and testing of the Eureka system and the confidence that may have been gained in its use. In the end, the Government must decide which factors are most important. Since the introduction of Eureka 147, data system forward error correction technologies, encoding technologies and compression technologies have advanced significantly. This can be quantified by saying that, for the same quality of sound (voice or music), approximately 2-4 times the number of channels can now be placed within the same spectrum as that occupied by Eureka. This is a conservative estimate and some would argue that an even greater improvement factor has been achieved. Southern Cross believes the two paramount issues, which must be addressed by future technical study activities are:

- The spectral efficiency of the data standard(s) that will ultimately be selected for terrestrial implementation of digital radio systems in Australia. This should be done while keeping quality standards well in mind.

- The ability of the selected standard(s) to be harmonized with those to be used by satellite digital sound broadcasting, sharing the same or adjacent bands.

Eureka and other candidate standards should be judged with these two criteria in mind and realizing that we are now in an era where software radios are a reality and that two fairly disparate standards can be “sorted out” by the same receiver. An example of this is provided by the efforts currently taking place in Europe and America where the incumbent GPS satellite navigation system is being merged with the new Galileo system. Receivers developed to support the union of the two space segments (to be known as GNSS) will be fully dual compatible, despite the very different modulation and data standards of the two systems. Prototype receivers already exist in Europe and will be available to the public within a few years. It’s worth adding that GNSS will operate in the L-Band region of the spectrum and that both systems share some common spectrum assignments and without mutual interference.

2.2 Future Work Program

In reviewing the future work elements, Southern Cross is surprised to find that none of the work objectives for the future specifically include study or analysis of the standards, spectrum requirements or unique needs of satellite-based digital broadcast systems. Further, while mention is made of trials taking place in Sydney and Melbourne and that will take place in “regional markets” no specific work is identified that supports the need of rural or remote

markets. For the sake of completeness, the strong connection between the capabilities of satellite-based digital radio technology (and it's current availability) and its ability to satisfy rural and remote market needs must not go unnoticed. This comment reinforces our *principle point a.* above.

Some attention in this section of the issues paper, is paid to what types of digital services might be provided in the short to medium term. Once again, it should be pointed out that satellite systems can offer wide area coverage and can be deployed within only a matter of a few years and with limited spectrum resources when compared with the cumbersome roll-out process that must take place for terrestrial technology. Satellite receivers are available and are as low cost as their terrestrial counterparts. This comment supports *principle points a.-e*. from above.

2.3 Threshold Issues for Digital Radio (Part A)

There are a number of issues Southern Cross would like to address in this section of the report.

2.3.1 Digital Radio Platform

"Comment is sought on the Study Group's conclusions that Eureka 147 would appear to be the appropriate platform for Australia to adopt for the terrestrial digital radio services. Comment is also sought on whether a hybrid Eureka/DRM should be considered to address regional and remote coverage issues."

The issues paper at page 5 notes that, "as a small market, Australia needs to be mindful of the economies of scale in the production of receiver and transmitter equipment at most radio receivers are imported. " While this point may be well founded, it begs the question as to why products such as these are "imported" to begin with? The answer to this question lies in the long standing reluctance of the government to make research and development investments in industries such as the digital radio market despite the existence of a number of on-shore high technology firms capable of supporting such development. Perhaps this point would best be addressed in a different forum, however, Southern Cross would take issue with both the reluctance of Australia to engage in such development activities and the size of the market, in this instance. With an addressable market of over 10 million receivers (assuming approximately half of the Australian population would ultimately own at least one such consumer item) the market for digital radios (both terrestrial and space) is really quite large enough to support an investment in Australia's own technologies and for the price point to be well within the consumer range. Once again, we pit the BUY AUSTRALIA slogan against the more short-sighted imperative

of keeping the cost down to consumers in the short run. This comment is in support of our *policy point e*. from above.

Regarding the development of a hybrid Eureka/DRM platform, the issues paper at page 6 speculates, "These developments may provide a suitable solution to Australia's regional coverage issues." In fact, it would be helpful to the public if the regional coverage issues were more clearly articulated in the issues paper. In summary, what are the regional coverage issues? We can only comment that, to the extent that regional coverage involves wide area and uniform availability of broadcast programming, satellite solutions are ideal. Perhaps instead of investigating a Eureka/DRM solution, it may well be that a hybrid Eureka/satellite solution would be the better choice.

2.3.2 Approaches to Implementation

Comment is sought on the appropriate model for the introduction of terrestrial digital radio services in Australia. Comment is also sought on whether digital radio should be considered as a replacement technology for existing analog radio services and, if so, the likely timeframe within which replacement can be expected to take place (and factors that would be relevant to that timeframe)."

The issues paper at page 7, reports that the DRSG sought to categorize possible approaches by which digital radio could be introduced. These were:

- A Full Conversion Approach
- A Market-Based Approach
- A Managed Introduction Approach

The document carefully defines each one of these options. The issues paper then reasserts the Government's five-year moratorium promise to the incumbent broadcasters and then concludes, "such measures would be consistent with either a Full Conversion or Managed Introduction model."

Southern Cross believes a public interest case has not been made in the issues paper. There is no supporting evidence provided (or referenced) which allows anyone to conclude that the citizens of Australia will be better served by a wholesale replacement of existing AM and FM broadcasting by its digital counterpart. DCITA correctly concludes, "A Full Conversion approach would require sufficient spectrum to accommodate all incumbent analog broadcasting services bands broadcasters in digital format…" We would ask, to what end or purpose? There is no apparent reason to replicate and/or replace existing AM and FM stations, unless the user community receives some tangible benefit in return. What is this benefit?

To the extent that the range of coverage can be extended; to the extent that quality can be improved; to the extent new service features can be offered; or if other tangible public benefits emerge, then clear pubic benefit could be shown. The entire exercise, if strictly Full Conversion-based, has no merit in the absence of such a showing. It is clear that finding spectrum for all incumbent national, community and high power open narrowcasters in addition to resources for new service offerings will be hard. Southern Cross proposes that a market-base approach should be considered; coupled with a clear showing of public benefit. Some incumbents may not find the replication of their programming in a new band with altered propagation characteristics to be at all attractive. Yet, others may see digital radio as a means to achieve new market objectives through new service offerings. A licensing regime whereby applicants demonstrate NEW public benefit in their application, in exchange for the right to occupy the radio spectrum, will better serve Australians than any conversion mandate dictated by the Government. These comments are directed toward our *policy points a.,b.,c.,d.,f. and h* above.

In the issues paper at page 7, the document notes, "It is projected that the number of digital radio sets sold in the UK will be around 1 million by year-end 2004. However, this figure constitutes only around 1 percent of the total number of analog receivers in the market – some nine years after digital radio services were first introduced." While this is one perspective of the market and the penetration rate, Southern Cross respectfully suggests, it is not the entire story. Satellite Digital Audio Radio was introduced in North America in November of 2001 by the firm, XM Radio. Since that time the growth of this subscription service has been from 0 to well in excess of 3 million subscribers. This means that more than this number of radios have been sold, as some customers own both mobile and fixed terminal receivers. A second service provider entered the American market within the next year and that firm, Sirius Satellite Radio, now has in excess of 0.5 million subscribers. So, this growth rate is in excess of 3.5 million receivers in approximately 3.5 years from a fresh start. The strategic partners supporting XM alone include 20 receiver manufactures, 13 distributors and 15 car dealers (offering SDAR receivers as manufacturer-supported options in automobiles). Indeed, in North America the roll-out of digital radio via satellite is well ahead of terrestrial digital radio. In the next year the number of receivers sold will be well in excess of 1 million (and with an exponential growth characteristic). That is only after 3.5 years in business AND with a subscription-based, mostly commercial free business model – essentially new in the radio industry. The point to be made is, satellite digital radio broadcasting IS ALSO digital radio. In evaluating the introduction of digital radio in Australia the success of SDARS in America should be put along side the success of terrestrial digital radio in Great Britain and the success of S-DSB in Africa

and Asia. The success story to be presented should be the SUM of these experiences, not one or the other. Satellite digital radio has earned a fair place along side its terrestrial counterpart and Australia can take advantage of both. It is not an "either-or" we should evaluate but, an "and." We agree with the findings of the DRSG as they conclude that the operation of analog and digital services is likely to continue for a significant period. However, we do not believe this will be due to the slow rate of up-take in the digital markets, rather we simply feel the digital markets likely to succeed, if open market conditions are allowed to flourish, will be new and alternative services - different in character from those offered in the analog domain - just as has transpired in North America. These comments support our *policy points a., b., e., f., h. and g* above.

In the issue paper at page 8, DCITA seems to worry about the long-term destiny of the AM and FM broadcast spectrum. Southern Cross has already commented regarding our projection that analog broadcast services still have a long and productive future ahead of them. Current and new service providers will still serve the public interest there, so long as program content conforms to public need. For the purposes of introducing digital radio into Australia, we believe the reallocation of this spectrum is a mute point.

2.3.3 Spectrum Availability and Performance

In the issue paper at page 8, a variety of issues pertaining to VHF utilization, capacity in the largest markets and adjacent and co-channel interference are outlined. Southern Cross maintains that many, if not all, of these problems would be non-existent, if:

- Digital radio were not used as a replacement technology;
- The superior properties of VHF FM propagation were retained;
- The notions of digital radio service introduction via Full Conversion or Managed Introduction were abandoned;

AND

- New and incumbent digital radio licensees were admitted to the spectrum, based on the evaluation of competitive applications (in the public interest) and on the basis of instant available spectrum (given the need for significant clearing of stations operating in other services within the L –band). In fact, Southern Cross recommends that terrestrial incumbents utilize the VHF band (i.e., unused television channels – not the currnet FM broadcast segment) thus keeping L-band for satellite and complementary terrestrial use (as per ITU-R allocation). This recommendation is also in line with the

propagation characteristics that are experienced in terrestrial mobile service where VHF exhibits superior performance in a Rayleigh distributed multipath environment.

Such a market–based strategy would allow services to grow with the market itself and with the administrations ability to obtain additional spectrum through the relocation or retirement of current band users. These comments support our *policy points d. and h*. above.

2.4 Regulatory Issues (Part B)

Southern Cross again wishes to comment upon a variety of regulatory proposals put forward in this part of the issues paper.

2.4.1 Multiplex Operation and Regulation

2.4.1.1 *Bit Rate Allocation*

"Comment is sought on the issues associated with audio bit rates, quality, coding systems and the numbers of services that may be made available in Australia. In providing responses, submitters are asked to also address the constraints on channel availability noted in the previous section."

We have already commented to the effect that policy makers must choose between current technologies that offer up to 4 times the spectral efficiency of older technologies (like Eureka 147) and the financial and intellectual "investments" parties to this proceeding have made in those same technologies. It can clearly be stated that Eureka 147, according to the issue paper, requires a 256 kbps data rate in order to support one CD-quality stereo channel. Using the satellite data standards employed by XM Radio or World Radio (AAC+) only 64 kbps is required to achieve the same CD-quality performance. By adopting the same standard for terrestrial applications (adjusted for terrestrial multipath fading and propagation characteristics) a dual compatible system could be more easily implemented. It is understood that considerable testing has taken place with the Eureka 147 standard, although the same can be said for the data system standards adopted for both Satellite Digital Audio Radio (SDAR) systems operating in North America. The choice is clear: spectrum efficiency vs. standard familiarity and confidence. In the longer term, Southern Cross believes spectrum will be the commodity in shortest supply and the smart money will be on selecting the best technology available. These comments are made in support of our *policy point g*.

2.4.1.2 *Mutiplex Licensing and Spectrum Allocation*

> "Comment is sought on the introduction of the multiplexer operator into the radio value chain, and in particular the implications for Australia's broadcasting market and regulatory frameworks. In particular, comment is sought on the appropriate arrangement for allocation of multiplex licenses and associated spectrum."

The issue paper at page 11 discusses the importance of multiplexing in the new paradigm of digital radio. It is stated, "The multiplex provider represents a new source of market power in digital radio." While this is one way to view the world, Southern Cross maintains it need not be so. A digital multiplexer is, after all, a straight-forward arrangement of hardware and software. It is not, by itself, a company or an entity of any kind. There are many instances in broadcasting where multiple operators, each with their own station license, operate using a common set of equipments (such as radio towers, power sources or platforms). Sharing arrangements are routinely work out. This situation is no different. To the extent that it might be found necessary to share ownership of multiplexing equipment, some potential sharing issues could arise as the issue paper anticipates further on. While some of the scenarios envisioned in the document could eventuate, it seems more likely that market forces could be counted upon to minimize the need for regulatory intervention. In many cases a simple consortium could be created that gives equal access to the *n* co-equal stations being multiplexed. In exchange for equal access, each station would be responsible for 1/*n* of the expenses incurred by the operator, who can remain a neutral party at hire. Each station would own 1/n th of the capital equipment of the multiplexer and RF transmission equipment.

Equitable distribution of particular categories of service would appear to be more of a problem for terrestrial digital radio services being multiplexed together. Resolution of this problem will likely require further dialog and debate among interested parties. Southern Cross does not, however, support the notion of manipulating participation among service categories by means of additional regulation or the establishment of weighted fee structures. Certainly this will only serve to make matters more complex than need be.

Recognizing that national, community service and non-commercial broadcasters could be disadvantaged, in this instance, we support the notion of a dedicated multiplexer for these transmissions.

We note that nowhere in the issues paper is the notion of multiplexing raised in the context of a satellite digital radio system. Southern Cross addresses this issue here as these systems, in general, could have multiplexing issues that are quite similar to their terrestrial counterpart. The SDARS satellite

systems operating in North America are primarily controlled by a single entity and content is the responsibility of that single licensee. This, however, need not be the case. Operators like XM have a very wide range of program source material and, clearly, each channel is dedicated to a particular theme, topic or special interest. This wide range of programming (which is highly desirable) need not be under the control of (or be generated by) a single entity or even a single licensee. The paper cited in the introductory paragraph of these comments discusses a business approach as well as a technical system. In our paper, the business model does not follow the same structure as XM Radio or Sirius Satellite Radio. The controlling entity is not, in fact, a broadcaster, but a kind of Satellite Radio Teleport. In this model, the teleport operator partners with new and incumbent broadcasters, event organizers and the entertainment industry in general. In effect, the potential exists for competition WITHIN the satellite system itself. And, as such, the same multiplexing issues arise for a single satellite system as in the terrestrial context. Such an approach also introduces the issue as to whether or not multiple satellite operators are required (or desired) in order to achieve the advantages that accrue to the consumer through the competitive process. Given the existence of a free and open market, unencumbered by excessive regulation and unfair political manipulation, we believe a satellite digital sound broadcast (S-DSB) system will emerge in Australia at least as quickly as any terrestrial infrastructure. In that case, channel multiplex and ownership issues in satellite system are equally import to this proceeding. These comments are in support of our *policy points b. and d*.

2.4.2 National and Community Broadcasters

> "Comment is sought on the role of the national broadcasters and the community broadcasting sector in the introduction of digital radio. In particular, comment is invited on the possible arrangements for the implementation of digital services by the non-commercial sector, including access to multiplex facilities and (in the case of the community broadcasters) license allocation."

In the issues paper at pages 12 and 13, it is noted that in several countries the national broadcaster is the sole provider of digital radio. Southern Cross feels this approach raises an interesting prospect. Generally, national and non-commercial broadcasters have a requirement or mandate to have broad area coverage. This need is well suited to digital satellite radio systems, which are capable of providing universal coverage from the onset of service. Thus, a logical migration path from analog service into digital would have national and some non-commercial broadcasters moving first to a satellite-based digital system and then, as regional needs may emerge, these requirements could be satisfied by terrestrial digital radio stations. This

approach supports our concept of harmonizing the introduction of digital radio and supports our *policy point f*.

2.4.3 Drivers of Take-up and Content Regulation

2.4.3.1 *Consumer Interest in Digital Radio*

> "Comment is sought on the key drivers that are likely to be important in support of the make-up of digital radio in Australia. In particular, comment is invited on the issues associated with the provision of new and niche audio services and innovative data services.

The issues paper at page 14 reports, "the Study Group concluded that a key driver for consumer take-up of digital radio internationally is the availability of new and niche audio services, beyond those currently available on analog radio." Southern Cross could not agree more with this finding. This is the essence of what digital radio can uniquely offer to the public. Two significant points can be added here:

- Services of this nature are dynamic by their nature and can best be offered in a competitive environment that encourages innovation and rewards new ideas.

- Niche markets are particularly problematic as their focused appeal also limits market size. The key to offering niche market products is market aggregation. Total market aggregation in the broadcast world can most efficiently be accomplished by satellite systems.

In fact, if one looks once again to the outside world for examples, the XM and Sirius systems are dynamic and innovative in their service offerings and it could be said that both of these systems are simply the amalgamation of niche channels. This is a major message for those who will be involved in the introduction of digital radio into Australia. What has been found to work (sell) in an environment where listeners have a similar lifestyle to those of Australians:

- Services that differentiate themselves from traditional radio services

- Services that have not previously been available

- Services made available with very limited or no advertising (by offering these services via subscription).

Further, there is brand new information available from the digital radio markets in North America that supports these observations. A SDARS forum was conducted at the SATCOM 20005 Conference, held in Washington, D.C. on March 22, 2005. Sources report that significant market analysis work has been done over the past year by several organizations. Two quite interesting and somewhat unexpected results from their work were reported at the conference:

- A large sample of interviewed SDARS subscribers reported their enthusiasm for listening was related to the fact that each channel "sets a mood" or a tone. That mood or tone is not interrupted or modified by commercial breaks or changes in content. To these individuals, this was the most important reason for their subscription.

- A survey of listeners identified that subscribers were willing to subscribe to the SDARS service *solely* to listen to a single channel that offered unique content, especially if that content was offered by no other source. Put into financial terms: In North America a significant audience is willing to pay $17 AUD per month in order to listen to a radio service that offers them one unique channel. Even more amazing is the added finding that the same individuals were also willing to purchase the satellite radio receiver for the same purpose.

These comments are made in support our *policy points b., d., e., and g* above.

2.4.3.2 Audio Services and Simulcasting

"Comment is sought on whether specific regulatory measures are necessary or appropriate to manage content and services on digital radio, including simulcast requirements, limits on non-audio services or limits on new digital only services."

In the issue paper at page 15 DCITA notes, "It may be appropriate to either ensure that digital radio retains an essentially audio focus, or to ensure the primary management of the radio market structure (in terms of balance of services) is retained by the Government's regulator." Southern Cross believes that such regulatory measures would likely not be required for a satellite-based system where an excellent mix of programming and service characteristics would be essential for the success (indeed, for the survival) of the providing entity, regardless of its form. However, for terrestrial markets, license differentiation within any given market may well be essential. We believe such regulatory

authority should be minimized to only that necessary to accomplish the broad objective of maintenance of a diverse selection of content choices and service options.

2.4.3.3 Data-Only Services

> "Comment is sought on the potential for data-only providers to operate on digital radio platforms.

The issues paper suggests that consideration might be given to establishing a new license type for the purpose of providing data only services (while not breaching the intent of the proposed radio license moratorium). Southern Cross is entirely opposed to the notion of the five year moratorium and in the face of such a moratorium we see no point to any particular licensing process if that process would, in any way, lengthen the time to market entry for the applicant on "artificial" grounds. Capital investment is a hard enough process without additional Government impediments being place along an already treacherous path.

We believe there will eventually be several categories of digital radio offerings and, as a consequence, this could require multiple license types. It is most likely that none of us will be able to predict the diversity or the size of this particular sub-market. The potential for diversity and growth, we feel, is enormous. We would recommend that regulatory flexibility be retained in this sector, as it is a very dynamic component of the entire digital radio market.

These comments are made in support of our ***policy points c., d., and f.***

2.5 Digital and Audio Services (Part C)

> "Comment is sought on [the] potential role for new digital audio platforms and on whether additional regulatory measures are needed to facilitate or encourage new platforms (including satellite) and whether measures are needed to ensure services do not replicate [the] terrestrial business model.
>
> Comment is also sought on the potential for the L-band to provide sufficient capacity for satellite delivered digital audio services while also meeting the requirements of terrestrial digital radio."

In the issue paper at page 17, DCITA reminds the commenter, “This issues paper focuses primarily on the particular issues relevant to the introduction of digital radio services that have broadly comparable characteristics to existing terrestrial analog radio services.” Southern Cross believes this directive is short sighted. Once again, if we look at the wider environment for digital radio outside of Australia we find the introduction of satellite digital radio has more than kept pace with its terrestrial counterpart. This is true in both the scope of investments made and the number of users reached (this based on the number of receivers sold). Further, the ITU has recognized the importance of satellite digital radio by the global allocation of spectrum in the 1.4 GHz BSS (S) band and in the 2.3/2.6 GHz band by footnote allocation for particular countries where L band is allocated for other purposes. We respectfully suggest, these two factors alone should signal to regulators, that the relative importance given to satellite systems in this issues paper is too low. Given the maturity of SDARS space transmission and ground receiver technology, an S-DSB system could be developed for Australia in a fraction of the time it will take to sort out the many terrestrial issues addressed by this issue paper. Rural and remote Australians as well as their urban counterparts could soon benefit from the new services that can be delivered by digital radio. This factor provides added emphasis to the importance of addressing satellite digital services on a par with terrestrial services. Southern Cross urges DCITA, ACA and ABA to accelerate their level of attention to S-DSB by urgently considering the important spectrum and regulator issues needed to guide service introduction in Australia. Southern Cross feels one satellite system providing 50 or more CD-quality stereo channels for Australia will require approximately 3 MHz of radio spectrum (ideally using the 1452-1492 MHz band allocated in ITU Region 3). In addition, a network of auxiliary, lower power terrestrial repeaters will be needed in some urban areas to augment satellite signals. These will be needed in order to overcome the “urban canyon” problem resulting from multipath propagation effects. The terrestrial repeater network will require an additional 3 MHz of spectrum and it would be ideal (but, not entirely essential) if this spectrum could be situated immediately adjacent to the satellite spectrum selected.

If a second satellite system is required to assure a competitive environment, then a second 6 MHz block of spectrum will be required. In principle, there is the potential for spectrum reuse through polarization diversity, however, multipath effects also depolarize satellite signals and the practical isolation possible for a mobile system is not sufficient to reuse the spectrum in this manner. The very low gain of subscriber receivers unfortunately precludes the reuse of the spectrum via Earth terminal antenna beam discrimination.

Southern Cross would like to offer one final comment relevant to the digital radio issues paper. There are those who would argue that a satellite system providing digital radio services uniquely for Australia would not be cost

effective, even if provided on a subscription basis. Indeed, if the service were introduce with the very large 18 KW satellite buses employed by XM Radio or Sirius Satellite Radio this could be a valid critique. However, three mitigating factors are important:

- Australia's smaller population can be served by a smaller, lower power system providing fewer channels (e.g. say, a 50 channel system).

- Modulation, coding and compression technologies continue to evolve and the latest standard will allow the Australian system to operate at only one half the EIRP/channel of current SDARS systems and without significant sacrifice in audio quality.

- Lower cost satellite technology, particularly in the past five years, has also evolved allowing smaller GEO systems (in the 1.5-3.0 kw class) to be introduced at much lower satellite and launch vehicle cost.

Taken together, these factors are a compelling argument for investment in an Australian system and the provision of S-DSB services in Australia at an early date.

3.0 Conclusion

Southern Cross wishes to thank DCITA for the opportunity to provide comments on this important issue and to contribute to this public debate. We urge DCITA to move forward with a balanced approach that will offer the pubic both terrestrial and satellite services. We urge the Government to move forward with a spirit of open competition and we respectfully suggest the five year moratorium will do considerable harm to a new industry that is already well behind the rest of the developed world. We would encourage DCITA, the ACA and the ABA to quickly establish working groups and/or other structures as may be needed to develop the technical and service regulations for the service. As an important part of this process representatives from the broadcast community and the satellite industry should fully participate.

Southern Cross Contact Information

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