Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	MM Docket No. 00-10
	)	MM Docket No. 99-292
Establishment of a Class A	)	RM-9260
Television Service	)	

COMMENTS

The firm of du Treil, Lundin & Rackley, Inc. (dLR) respectfully submits these Comments in the above captioned proceeding relating to the establishment of a Class A Television license available to licensees of qualifying low power television (LPTV) stations as prescribed by the Community Broadcasters Protection Act of 1999 (CPBA) enacted by Congress on November 29, 1999. dLR has provided consulting engineering services to the communications industry for almost 60 years as well as to the LPTV industry since its inception in 1982. dLR is cognizant of the arduous task the Federal Communications Commission (FCC) has undertaken in this proceeding, including the short 120-day statutory deadline imposed by the CPBA. As such, these Comments are being provided to assist the FCC in developing the various technical regulations applicable to Class A stations.

Paragraph 10

Analog (NTSC) Class A Protected Service Area: dLR agrees that the protected service area of an NTSC Class A station should be protected signal contours as currently defined in the Section 74.707(a) for LPTV stations: 62 dBu for stations on channels 2-6; 68 dBu for stations on channels 7-13; and 74 dBu for stations on channels 14-69. These contours have been used since the inception of the LPTV service in 1982 and have served the industry well in balancing service and interference.

Digital TV (DTV) Class A Protected Service Area: dLR believes it would be inappropriate to use the current NTSC protected contours for DTV Class A stations. The Federal Communications Commission (FCC) used the 28 dBu (low VHF channels 2-6), 36 dBu (high VHF channels 7-13) and the 41 dBu (UHF channels 14-69) noise-limited contours to replicate full-service NTSC Grade B coverage. LPTV stations are protected to a higher value for each service band. Therefore, dLR suggests that the FCC consider a similar "ratio" approach for the DTV Class A service which takes into account the differences in the protected contour values between full-

service and LPTV NTSC stations.. The following tabulates the current full-service NTSC Grade B contour values, the full-service DTV noise-limited contour values, the difference between these contours (in dB) which is used as the "ratio" to determine the appropriate DTV Class A service contour, the current LPTV protected contour values, and the proposed DTV Class A protected service contour:

(1) Service Band	(2) Full-Service NTSC Grade B Contour (dBu)	(3) Full-Service DTV Noise-Limited Contour (dBu)	(4) Difference Between (2) and (3) (dB)	(5) LPTV NTSC Protected Contour (dBu)	Proposed DTV Class A Protected Contour (dBu)
Low VHF	47	28	-19	62	43
High VHF	56	36	-20	68	48
UHF	64	41	-23	74	51

DTV Class A Facilities/Service Replication: The DTV allotments for existing NTSC stations were based on replication of current Grade B coverage. Furthermore, for DTV allotments within the same band (i.e. VHF NTSC/VHF DTV and UHF NTSC/UHF DTV), the allotted DTV ERP is significantly lower than the current NTSC ERP. In other words, it takes significantly less DTV ERP to provide coverage replication. Therefore, dLR believes that it would be inequitable to permit Class A stations "convert" to DTV using their current NTSC facilities (i.e. the same ERP and HAAT), as this would result in a significant extension of current coverage. Instead, dLR suggests that Class A DTV facilities should be based on the "service replication" method, which was used to develop the current DTV allotment table. The following tabulates a possible approach to Class A DTV service replication. For each service band, "reasonable" NTSC LPTV facilities (ERP/HAAT) were presumed and the resulting distance to the protected service contour [F(50,50)] was determined. Based on these distances, the corresponding DTV facilities necessary to project the protected DTV contour [F(50,90), as proposed above] approximately the same distance as the current protected service contour were determined.

Service Band	LPTV NTSC Facilities (ERP/HAAT)	LPTV NTSC Protected Service Contour [F(50,50)]		Class A DTV Facilities (ERP/HAAT)	Class A DTV Protected Contour [F(50,90)]	
		dBu	Distance (km)		dBu	Distance (km)
Low VHF	0.1 kW/150 m	62	11.2	0.002 kW/150 m	43	12.5
High VHF	0.25 kW/150 m	68	11.7	0.003 kW/150 m	48	12.4
UHF	10 kW/150 m	74	18.2	0.06 kW/150 m	51	18.5

It is noted that the tabulated DTV ERP values necessary to "replicate" current coverage are somewhat low, which raises concerns about providing an adequate DTV signal to overcome path losses (i.e. clutter, terrain factors, multi-path, etc.) and noise. Therefore, consideration might be

given to adding a "dB" factor to these ERP levels. For instance, a 3 dB increase might be considered as this would double the ERP without significantly effecting D/U ratios.

Finally, Class A stations should also be permitted to increase their DTV facilities in the future, provided appropriate interference protection is provided (see proposed interference protection criteria below). In this regard, it is expected maximum permitted ERP values will also need to be developed. dLR suggests the ERP levels listed in Section 74.735(b) for digital low power TV stations as the basis for digital Class A ERP limitations.

Paragraph 12

Alternative Class A Eligibility Criteria: dLR believes that an eligible Class A stations should be required to operate with a carrier frequency "offset" for its NTSC operation.[1] This will permit minimization of interference and maximization of service.

In order to control co-channel interference and maximize spectrum usage, the FCC allots full service NTSC TV assignments with an offset designation. All full service NTSC TV assignments have an offset designation. However, not all LPTV stations have a designated offset. When an LPTV station has no offset, then the FCC's more restrictive interference standards must be employed, namely, a desired-to-undesired (D/U) interference ratio of 45 dB. This same ratio is employed if the LPTV stations under study have the same offset. This ratio not only applies to interference caused, but also impacts interference received (i.e. the proposed service area). If, however, the stations employ different offsets, then a more relaxed D/U interference ratio of 28 dB can be used. Not only is interference protection still provided to the other station, but a reduction in interference received can also be achieved. Furthermore, a new offset for a station which had no previous offset can: (1) foster a reduction in interference to other existing LPTV stations which could not be offset with it before; (2) permit increases in the facilities of stations previously not offset with each other (i.e. service improvement); and (3) permit new LPTV service to areas that were previously precluded due to the more restrictive D/U ratio. Hence,

[1] Offset operation is permitted by Sections 74.705 and 74.707 of the LPTV rules as a means for limiting interference. The possible offsets are the same for full service NTSC TV stations: zero (o), at the standard carrier frequency for the channel; plus (+), with the carrier frequency 10 kHz above the zero offset carrier; and minus (-), with the carrier frequency 10 kHz below the zero offset carrier. The frequency tolerance of a LPTV station operating with a specified offset will be $\pm$1 kHz, the same as the full service TV station frequency tolerance. The frequency tolerance for LPTV stations operating without a specified offset is $\pm$0.02% of the assigned carrier frequency for transmitters rated at no more than 100 watts, and $\pm$0.002% of the assigned carrier frequency for transmitters rated at more than 100 watts.

LPTV stations using offset fosters spectrum efficiency, in an age of diminishing spectrum availability, and increases TV service to the public.[2]

Paragraph 13

Class A Interference Protection: dLR believes that "mutual interference agreements" should be permitted between a Class A station and other NTSC and DTV stations to allow increased interference. It is noted that this is currently permitted for LPTV stations.

Paragraph 14

Class A NTSC Interference Protection: dLR believes that the interference protection criteria to be used by other NTSC facilities (Class A, LPTV and full-service NTSC) to protect Class A stations should "initially" be based on the contour overlap method currently used for LPTV applications protecting the Grade B contours of a full service NTSC station as set forth in Section 74.705 of the LPTV rules, with some exceptions noted below. This method has been successfully used by LPTV stations since the inception of the service 18 years ago to protect other LPTV and full service NTSC stations and is considered a reasonable allocation tool.

UHF LPTV stations have historically been allotted without consideration being given to interference "received" by other LPTV or NTSC stations operating the so-called "taboo" channels, namely, on (1) the second, third, fourth and fifth channels above and below their channel (±2-5, intermodulation taboo), (2) the seventh below their channel (-7, oscillator taboo) and (3) the fourteenth and fifteenth channel above their channel (+14, sound image, and +15, picture image taboos).[3] Generally, the potential for interference to the LPTV station is limited to the area in the immediate vicinity of the taboo channel station's transmitter site.[4] Furthermore, dLR is not aware of any instances of significant "received" interference being experienced by an existing LPTV station from another LPTV or full-service NTSC station operating on the aforementioned "taboo" channels. In addition, this approach is believed to offer a reasonable "trade-off" of protection of a Class A station's coverage area and the continued introduction of new and expanded NTSC (and future DTV) service. Therefore, it seems unreasonable at this late

[2] Inquiries to LPTV transmitter manufacturers indicate the conversion costs to run from $500 to $2500 depending on the transmitter. In the worst case, a new transmitter may have to be purchased if, for some reason, the existing transmitter cannot be modified for the new offset.

[3] The exception to this has been mutually exclusive LPTV applications, which have had to consider the seven and fourteen channel interference potential. However, it is noted that this interference potential is routinely "waived" by the FCC based on mutual agreement, terrain considerations, etc.

[4] OET Bulletin No. 69 indicates that the D/U ratios for the ±2-4 channels and the +14 channel taboos, which were used to develop the DTV allotment table, are between –23 dB and –33 dB. Thus, for the

date, with diminishing spectrum availability, to require other NTSC stations (Class A, LPTV and full-service NTSC) to protect Class A stations operating on the taboo channels. The only exception to this is the fifteen channel (+15) picture image taboo, as the interference potential is significantly greater than the other taboo channels. Therefore, dLR proposes the following protection criteria are utilized to "initially" determine if an NTSC station (Class A, LPTV and full-service NTSC) protects a Class A NTSC facility:

Service Band	Protected Contour (dBu)	Co-channel D/U Ratio[5] (dB)	1st Upper Adjacent Channel D/U Ratio (dB)	1st Lower Adjacent Channel D/U Ratio (dB)	15 Channels Above D/U Ratio (dB)
Low VHF	62	+28/45	-12	-6	n/a
High VHF	68	+28/45	-12	-6	n/a
UHF	74	+28/45	-15	-15	-6

If the pertinent NTSC (Class A, LPTV or full-service NTSC) facility complies with the above criteria, then there is no need for further analysis. However, if the NTSC facility does not comply with these initial criteria, then the NTSC facility should have the option of "subsequently" using the provisions of OET Bulletin No. 69, which includes the Longley-Rice propagation model, to demonstrate that the level of potential interference can be considered *de minimus*. dLR further suggests that NTSC facilities be permitted to use the 2%/10% *de minimus* interference policy currently permitted for DTV protection of NTSC stations. In addition, NTSC stations should also be permitted to consider the interference already calculated to be caused (i.e. "masking"), including that interference calculated to be caused by other authorized (CP, license) Class A, LPTV, NTSC and DTV stations. Finally, dLR believes that "mutual interference agreements" should be permitted.

Class A DTV Interference Protection: dLR believes that the interference protection criteria to be used by other NTSC facilities (Class A, LPTV and full-service NTSC) and DTV stations to protect Class A DTV stations should be based on the provisions of OET Bulletin No. 69, as this is the method currently used by the FCC to determine protection of DTV facilities. Furthermore, the same D/U ratios contained in OET Bulletin No. 69 should be utilized to determine the potential for interference. It is noted that the FCC may, at some future date, consider updating the D/U ratios to take into account the differences between the Class A DTV protected contour values (proposed above) and the current full-service NTSC protected contour values (Grade B). Therefore, dLR proposes that the following protection criteria be utilized to determine if an

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"worst-case" D/U ratio of –23 dB, interference at the Class A protected 74 dBu contour would occur where the interfering field strength was greater than 97 dBu (74+23).

NTSC station (Class A, LPTV and full-service NTSC) or DTV facility protects a Class A DTV facility. The protection criteria would be applicable to Low VHF, High VHF and UHF Class A DTV facilities.

Channel Offset (N – Desired Channel)	D/U Ratios	
	NTSC into Class A DTV	DTV into Class A DTV
N-1 (lower adjacent)	-48	-28
0 (co-channel)	+2	+15
N+1 (upper adjacent)	-49	-26

As with NTSC interference to Class A NTSC facilities noted previously, dLR further suggests that NTSC and DTV facilities be permitted to use the 2%/10% *de minimus* interference policy currently permitted for DTV protection of NTSC stations. In addition, NTSC and DTV stations should also be permitted to consider the interference already calculated to be caused (i.e. "masking"), including that interference calculated to be caused by other authorized (CP, license) Class A, LPTV, NTSC and DTV stations. Finally, dLR believes that "mutual interference agreements" should be permitted.

Paragraph 15

NTSC Class A Interference Protection from DTV: dLR believes that the interference protection criteria to be used to protect Class A NTSC stations by DTV stations seeking to expand coverage beyond their allotted facilities, as well as petitioners for new DTV allotments, should also be based on the provisions of OET Bulletin No. 69, with the exception that only co-channel and first adjacent channel interference should be considered. In this regard, it is noted that the FCC created the DTV allotment table without consideration of the potential for "taboo" channel interference to UHF LPTV stations. In other words, LPTV stations, in order to survive the DTV transition as spectrum diminishes, already have "accepted" whatever "taboo" channel interference occurs from DTV facilities. Furthermore, the D/U ratios contained in OET Bulletin No. 69 applicable to the taboo channels vary from –24 dB to –43 dB. Therefore, the potential for interference to the LPTV station is limited to the area in the immediate vicinity of the taboo channel DTV station's transmitter site. In addition, this approach is believed to offer a reasonable "trade-off" of protection of a Class A station's future DTV coverage area and the continued introduction of expanded and new DTV service. Therefore, dLR proposes the FCC adopt the following protection criteria to determine if a DTV facility expanding coverage, or a petitioner for a new DTV allotment, protects a Class A NTSC facility:

[5] The 28 dB ratio applies to stations operating "offset" with each other, the 45 dB ratio applies to stations operating with the same offset or with the LPTV station operating without an offset. As noted previously, it is proposed to require all Class A stations to operate with an offset.

Channel Offset (N – Desired Channel)	D/U Ratios
	DTV into Class A NTSC
N-1 (lower adjacent)	-14
0 (co-channel)	+34
N+1 (upper adjacent)	-17

dLR further suggests that DTV facilities be permitted to use the 2%/10% *de minimus* interference policy currently permitted for DTV protection of full-service NTSC stations. In addition, DTV stations should also be permitted to consider the interference already calculated to be caused (i.e. "masking"), including that interference calculated to be caused by other authorized (CP, license) Class A, LPTV, NTSC and DTV stations. Finally, dLR believes that "mutual interference agreements" should be permitted.

Paragraph 24

It has been common practice by the FCC to protect facilities that have received a construction permit (CP). Therefore, dLR believes the FCC should continue this practice for qualified Class A stations.

Paragraph 25

TV channels 2-6 were adopted as part of the permanent DTV (channels 2-51) core in the Commission's February 23, 1998 Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order in MM Docket No. 87-268 (13 FCC Rcd 7418, 1998). If the FCC authorizes Class A stations, dLR believes those channels should also be eligible.

Paragraph 27

It has been common practice by the FCC to protect facilities that have been licensed or have received a CP. Should the FCC determine that pending rule makings are not entitled to such protection, then the Petitioners should be given the opportunity to modify their allotment requests to protect eligible Class A stations that may become a conflict. Mutual interference agreements should also be permitted.[6]

[6] It is also requested that the FCC remove the "old" Land Mobile Radio Service proposals which are not required to be protected, as well as vacant and unapplied for NTSC allotments, from the TV database,.

Paragraph 29

dLR supports the continued use of the provisions of Section 74.705 by Class A stations to protect the Grade B contours of full service NTSC stations. dLR also believes that Class A stations should be permitted to use all other means of interference analysis currently afforded LPTV stations in the DTV proceeding, including the use of the Longley-Rice propagation model and the provisions of OET Bulletin No. 69. In addition, Class A stations should also be permitted to consider the interference already calculated to be caused (i.e. "masking"), including that interference calculated to be caused by other authorized (CP, license) Class A, LPTV, NTSC and DTV stations. Finally, dLR believes that "mutual interference agreements" should be permitted.

Paragraph 30

dLR supports the FCC's proposal to permit Class A stations to determine noninterference to DTV allotments/stations in the same manner as applicants for full service NTSC facilities, including the use of OET Bulletin No. 69 and consideration of "masking". dLR also supports the including the prohibition on *de minimus* interference other than a 0.5% rounding allowance. Finally, dLR believes that "mutual interference agreements" should be permitted, as currently permitted by full service NTSC and DTV stations.

Paragraph 46

Protection of NTSC facilities based on the maximum permitted facilities is not spectrum efficient. Furthermore, NTSC operations are relatively short-lived. Therefore, dLR believes that protection of authorized (licensed, CP) facilities of full service NTSC and Class A is appropriate. Protection of maximized DTV operations is noted in the CPBA, and the DTV maximization applications must be filed by May 1, 2000.

Paragraph 47

dLR supports a "first-come, first-served" filing approach between Class A and full service stations.

Paragraph 48

dLR believes that Class A stations proposing to convert from NTSC to DTV should be considered "minor changes" if the DTV service area does not extend beyond the current NTSC

service area (i.e. service replication) and interference protection is provided. Increases in DTV facilities, which extend coverage beyond the authorized NTSC or DTV service area should be permitted on a “first-come, first-served” basis.

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