

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
CONSTRUCTION PERMIT
TELEVISION STATION KRMA-DT
DENVER, COLORADO

May 25, 2006

CHANNEL 18 18 KW 178 M

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Technical Statement

This Technical Exhibit was prepared on behalf of digital television broadcast station KRMA-DT, Denver, Colorado, in support of an application for modification of construction permit. KRMA-DT is paired with analog NTSC TV station KRMA-TV, Channel 6. Pursuant to the FCC *Sixth Report and Order* concerning digital television, KRMA-DT was allotted Channel 18 as its transitional DTV channel, with a maximum effective radiated power (ERP) of 1000 kW and antenna height above average terrain (HAAT) of 292 m, located at its analog transmitter site on Lookout Mountain.* KRMA-DT is authorized for operation on Channel 18 with a maximum directional ERP of 1000 kW with an HAAT of 340 m from a site on Mt. Morrison.† KRMA-DT currently operates under FCC Special Temporary Authority (STA) at the Republic Plaza Building within the city of Denver.‡

The instant application proposes operation of the KRMA-DT facility at the existing KRMA-DT STA transmitter site, but using a different antenna with an increase in ERP and decrease in HAAT. The proposal complies with the requirements the FCC Filing Freeze for television stations.§ The proposed KRMA-DT facility provides service to 80% of the KRMA-DT baseline service population under the criteria

* See DTV Table of Allotments, *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders*, 14 FCC Rcd 1348, at Appendix B.

† See FCC File No. BMPEDT-20030728AJU.

‡ See FCC File No. BDSTA-20030224ADA.

§ See *August 2004 Filing Freeze PN*, DA 04-2446 (MB rel. Aug. 3, 2004).

adopted in the Report and Order in the Second Periodic Review of digital television (September 2004). This is demonstrated in Appendix 2 herein.

Proposed Facilities

The proposed transmitting antenna will employ a RF Technologies, model SFN-2030-B-6 antenna, which will be top-mounted on the roof of the Republic Plaza Building. The transmitter site elevation is 1,594 m AMSL. The antenna center of radiation will be located at 222 m above ground level and 1,816 m AMSL. The proposed KRMA-DT facility will operate on Channel 18 with a non-directional average ERP of 12.5 dBk (18 kW) and antenna radiation center HAAT of 178 m.

There are no AM broadcast stations located within 3.2 km of the proposed transmitter site. There are no FCC Monitoring stations in proximity to the proposed facility.

The proposed facility is not located within the Canadian or Mexican coordination zones. The proposed transmitter site is located 46.3 km from the Table Mountain location within the Table Mountain Radio Receiving Zone. A calculation of the field strength over the Table Mountain location indicates a signal level 60.5 dBu (1.06 mV/m). This is 29 dB below the maximum permissible level specified in Section 73.1030 of the FCC Rules. Therefore, the proposal complies with Section 73.1030 of the FCC Rules concerning protection of the Table Mountain Radio Receiving Zone.

The applicant recognizes its responsibility to correct objectionable electromagnetic interference problems that may result from its proposed operation.

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Denver in compliance with Section 73.625(a)(1) of the FCC Rules. Figure 2 herein is a map depicting the predicted coverage contours of the proposed facility.

Tower Registration

The existing antenna structure is registered with the FCC. The FCC antenna structure registration number is 1063701. There will be no change in the overall height of the antenna structure as a result of the instant proposal.

Allocation Considerations

The proposed KRMA-DT Channel 18 facility meets the requirements of Section 73.623 of the FCC Rules concerning predicted interference to other existing U.S. NTSC facilities and U.S. DTV allotments and assignments. Longley-Rice interference analyses were conducted pursuant to the requirements of the FCC Rules; OET Bulletin No. 69; and published FCC guidelines for preparation of such interference analyses. The Longley-Rice interference analyses were conducted using the software developed by du Treil, Lundin & Rackley, Inc. based on the FCC published software routines.^{**} Stations selected for analysis were determined pursuant to the distance requirements outlined in the FCC DTV Processing Guidelines Public Notice. The results of the interference analyses for the proposed KRMA-DT facility are summarized herein at Figure 3. As indicated therein, the proposed facility will meet the 2%/10% criterion outlined in the FCC Rules and published guidelines with respect to all considered stations.

^{**} The duTreil, Lundin & Rackley, Inc. DTV interference analysis program is a precise implementation of the procedures outlined by the FCC in the Sixth Report and Order; subsequent Memorandum Opinion and Order; and FCC OET Bulletin No. 69. A nominal grid size resolution of 2 km was employed.

With respect to Class A TV station protection, the proposal has been evaluated according to the requirements of Section 73.623(c)(5) of the FCC Rules. The analysis reveals no potentially affected Class A TV stations.

Environmental Considerations

With respect to the potential for human exposure to radio frequency (RF) radiation, calculations prepared in accordance with FCC Bulletin OET-65 (Edition 97-01) indicate that the proposal will not result in human exposure to RF radiation at ground level in excess of FCC standards.

Power density calculations were conducted at 2-m above ground based on the following conservative assumptions, with the following results:

Call Sign	Channel	Average ERP (kW)	Distance (m)	Relative Field Factor ^{††}	FCC Limit ^{‡‡} (mW/cm ²)	Percentage of Limit
KRMA-DT	18	18	248	0.30	0.331	0.27%

As indicated above, the exposure to RF radiation at 2-m above ground level will not exceed 0.27% of the FCC limit for general population / uncontrolled exposure.

With respect to the building on which the antenna is mounted, the building management has established policies and procedures that strictly control access to certain areas of the roof where there may be RF exposure levels in excess of FCC limits. RF exposure measurements shall be conducted after the installation has been completed to verify continued compliance with the FCC limits to human exposure to RF

^{††} This is a conservative estimate of the relative field factor over the range of angles from 90° to 8° below the horizontal.

^{‡‡} for general population/uncontrolled environments

energy. The strict work rules in place concerning access to certain areas of the building roof will continue; and the applicant shall cooperate in implementation of the work rules. Therefore, the proposal complies with the FCC limits for human exposure to RF radiation and it is categorically excluded from environmental processing.

A handwritten signature in black ink, appearing to read "Louis du Treil, Jr.", written in a cursive style.

Louis Robert du Treil, Jr.

du Treil, Lundin & Rackley, Inc.
201 Fletcher Ave.
Sarasota, FL 34237

May 25, 2006

Figure 1

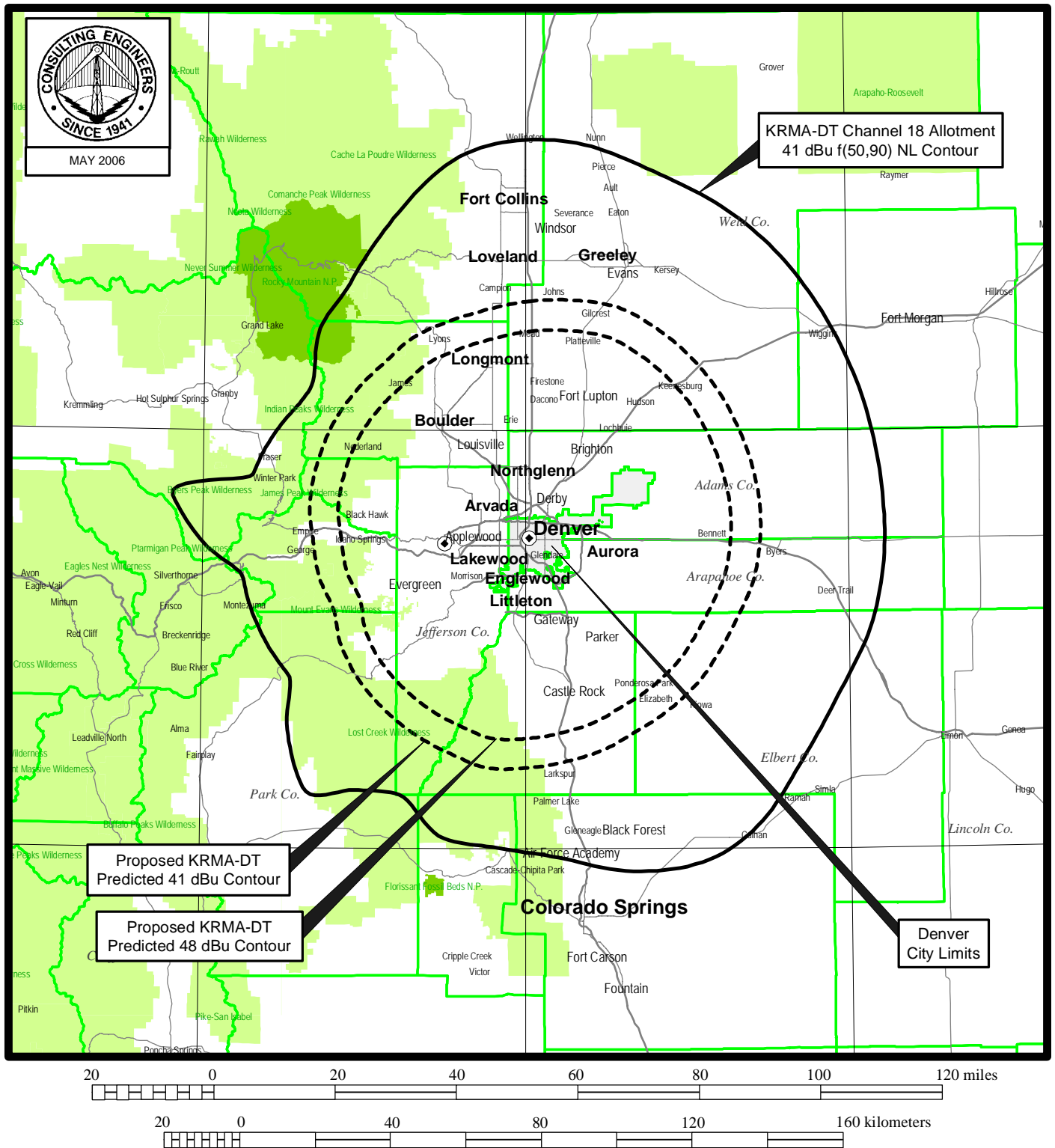
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 DENVER, COLORADO
 CHANNEL 18 18 KW 178 M

Technical Specifications

Channel / Frequency Band	18 / 494-500 MHz
Site Coordinates (NAD 27)	39°44'37" North Latitude 104°59'18" West Longitude
Site elevation	1,594 m AMSL
Average elevation of standard eight radials, 3 to 16 km	1,638 m AMSL
Overall height of existing structure	250 m AGL / 1,844 m AMSL
Height of antenna radiation center	222 m AGL / 1,816 m AMSL
Antenna radiation center HAAT	178 m

Proposed Operation	
Parameter	DTV
Transmitter power output	4.73 dBk (3.0 kW)
Transmission line loss (Andrew, HJ7-50A, 170-ft)	0.81 dB
Antenna input power	3.92 dBk
Antenna nominal RMS gain (RF Technologies, SFN2030-B-6)	8.58 dB
Nominal non-directional effective radiated power (ERP)	12.5 dBk
Nominal non-directional ERP in kilowatts	18 kW

Figure 2



PREDICTED COVERAGE CONTOURS

TELEVISION STATION KRMA-DT
DENVER, COLORADO
CHANNEL 18 18 KW 178 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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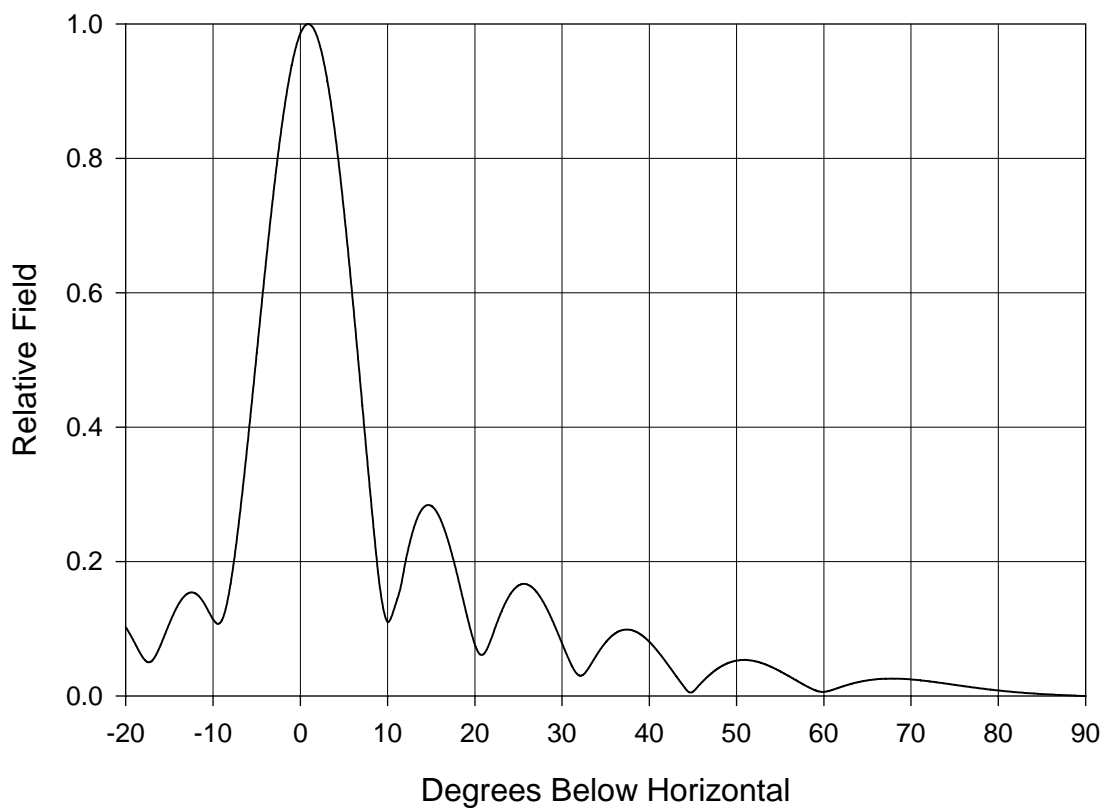
Summary of OET-69 Interference Analysis

Stations Potentially Affected by Proposed Station							
Facility Number	Channel	Call	City State	Distance (km)	Status	Application Prefix	Application Reference Number
1	14	KTFD-TV	BOULDER CO	21.2	CP MOD	BMPCT	19960716KL
2	17	KMGH-DT	DENVER CO	21.3	PLN	DTVPLN	DTVP0252
3	17	KMGH-TV	DENVER CO	20.8	CP MOD	BMPCDT	20000421AAV
4	18	KRMJ	GRAND JUNCTION CO	331.3	CP	BPET	20040227AAV
5	18	KRMJ	GRAND JUNCTION CO	290.7	LIC	BLET	19970807KL
6	18	KWNB-DT	HAYES CENTER NE	349.8	PLN	DTVPLN	DTVP0316
7	18	KFNB-DT	CASPER WY	351.2	PLN	DTVPLN	DTVP0335
8	18	KFNB	CASPER WY	351.2	CP	BPCDT	20000110AAG
9	19	KTVD-DT	DENVER CO	21.4	PLN	DTVPLN	DTVP0342

Stations Potentially Affected by Proposed Station							
Facility Number	Channel	Call	City State	Distance (km)	Status	Application Prefix	Application Reference Number
10	19	KTVD	DENVER CO	20.8	CP MOD	BMPCDT	19981231KE
11	20	KTVD	DENVER CO	20.8	CP	BPCT	20020813ABA
12	20	KTVD	DENVER CO	21.4	LIC	BLCT	19881219KP
13	21	KXRM-TV	COLORADO SPRINGS CO	111.5	LIC	BLCT	19981109KH
14	21	KFCT	FORT COLLINS CO	100.9	APP	BSTA	20050913ABX
15	22	KFCT	FORT COLLINS CO	100.9	LIC	BLCT	19950628KF
16	25	KDEN	LONGMONT CO	40.3	CP	BPCT	20040524AOH
17	25	KDEN	LONGMONT CO	39.9	LIC	BLCT	19970428KE

Summary of Interference Analysis for Worst-Case Scenarios							
Facility Number	Interference Population Before Analysis	Interference Population After Analysis	Baseline Population	Net Change in Interference	Percent of Baseline	Permissible Percent of Baseline	Result
1	--	--	--	*	0.000	--	pass
2	9261	7229	2246783	-2032	-0.090	2.0	pass
3	6113	4338	2246783	-1775	-0.079	2.0	pass
4	--	--	--	*	0.000	--	pass
5	--	--	--	*	0.000	--	pass
6	--	--	--	*	0.000	--	pass
7	--	--	--	*	0.000	--	pass
8	--	--	--	*	0.000	--	pass
9	12705	3408	2113028	-9297	-0.440	2.0	pass
10	9823	1790	2113028	-8033	-0.380	2.0	pass
11	--	--	--	*	0.000	--	pass
12	--	--	--	*	0.000	--	pass
13	--	--	--	*	0.000	--	pass
14	--	--	--	*	0.000	--	pass
15	--	--	--	*	0.000	--	pass
16	--	--	--	*	0.000	--	pass
17	--	--	--	*	0.000	--	pass

*Proposal causes no interference.



Antenna: RF Technologies, SFN2030-B-6

Pattern based on manufacturer supplied data.

TRANSMITTING ANTENNA ELEVATION PLANE PATTERN (GRAPH - RELATIVE FIELD)

TELEVISION STATION KRMA-DT
DENVER, COLORADO
CHANNEL 18 18 KW 178 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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Calculation of Predicted Service Population
Using FCC OET Bulletin No. 69 Methodology

(four pages follow)

Summary of analysis:

FCC Baseline Data for KRMA-DT from Public Notice, "DTV Channel Election Information and First Round Election Filing Deadline," Released: December 21, 2004, DA 04-3922, Table II.

Denver, CA, KRMA-TV, NTSC = 2,853,599; DTV = 2,963,047.

Using lesser of the NTSC and DTV Baselines, baseline population = 2,853,599.

From OET-69 Analysis, net service of KRMA-DT proposed facility = $2,463,425 - 180,503 = 2,282,922$.
(Scenario #1)

Calculated percentage of service = $2,282,922 / 2,853,599 \times 100\% = \underline{80.0\%}$

2000 Census data selected
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 05-25-2006 Time: 12:28:41

Record Selected for Analysis

KRMA-DT USERRECORD-01 DENVER CO US
Channel 18 ERP 18. kW HAAT 178. m RCAMSL 01816 m
Latitude 039-44-37 Longitude 0104-59-18
Status APP Zone 2 Border
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	41.0 dBu F(50,90) (km)
0.0	18.000	214.0	63.0
45.0	18.000	229.1	64.0
90.0	18.000	185.2	61.1
135.0	18.000	154.0	58.9
180.0	18.000	183.1	61.0
225.0	18.000	163.8	59.6
270.0	18.000	131.5	57.3
315.0	18.000	163.1	59.6

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quite zone

Proposed facility OK toward Table Mountain

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
18	KRMA-DT	DENVER CO	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
14	KTFD-TV	BOULDER CO	21.2	CP MOD	BMPCT	-19960716KL
17	KMGH-DT	DENVER CO	21.3	PLN	DTVPLN	-DTVP0252
17	KMGH-TV	DENVER CO	20.8	CP MOD	BMPCDT	-20000421AAV
18	KRMJ	GRAND JUNCTION CO	331.3	CP	BPET	-20040227AAV
18	KRMJ	GRAND JUNCTION CO	290.7	LIC	BLET	-19970807KL
18	KWNB-DT	HAYES CENTER NE	349.8	PLN	DTVPLN	-DTVP0316
18	KFNB-DT	CASPER WY	351.2	PLN	DTVPLN	-DTVP0335
18	KFNB	CASPER WY	351.2	CP	BPCDT	-20000110AAG
19	KTVD-DT	DENVER CO	21.4	PLN	DTVPLN	-DTVP0342
19	KTVD	DENVER CO	20.8	CP MOD	BMPCDT	-19981231KE
20	KTVD	DENVER CO	20.8	CP	BPCT	-20020813ABA
20	KTVD	DENVER CO	21.4	LIC	BLCT	-19881219KP
21	KXRM-TV	COLORADO SPRINGS CO	111.5	LIC	BLCT	-19981109KH
21	KFCT	FORT COLLINS CO	100.9	APP	BSTA	-20050913ABX
22	KFCT	FORT COLLINS CO	100.9	LIC	BLCT	-19950628KF
25	KDEN	LONGMONT CO	40.3	CP	BPCT	-20040524AOH
25	KDEN	LONGMONT CO	39.9	LIC	BLCT	-19970428KE

%%%

Analysis of Interference to Affected Station 18

DTV Baseline Analysis

Channel	Call	City/State	Application	Ref. No.
18	KRMA-DT	DENVER CO	DTVPLN	-DTVP0297

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
17	KMGH-DT	DENVER CO	1.1	PLN	DTVPLN	-DTVP0252
18	KRMJ	GRAND JUNCTION CO	268.7	PLN	DTVPLN	-NPLN1011
18	KWNB-DT	HAYES CENTER NE	371.6	PLN	DTVPLN	-DTVP0316
18	KFNB-DT	CASPER WY	346.4	PLN	DTVPLN	-DTVP0335
19	KTVD-DT	DENVER CO	7.0	PLN	DTVPLN	-DTVP0342

Results for: 18A CO DENVER DTVPLN DTVP0297 PLN

HAAT 292.0 m, ATV ERP 1000.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	3184940	32522.3
not affected by terrain losses	2994845	28556.0
lost to NTSC IX	0	0.0
lost to additional IX by ATV	31798	463.8
lost to ATV IX only	31798	463.8
lost to all IX	31798	463.8

NTSC Baseline Analysis

Channel	Call	City/State	Application	Ref. No.
06	KRMATV	DENVER CO	DTVPLN	-NPLN0400

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
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05	KOAATV	PUEBLO CO	162.2	PLN	DTVPLN	-NPLN0343
05	KGWNTV	CHEYENNE WY	153.7	PLN	DTVPLN	-NPLN0390
06	KREZTV	DURANGO CO	358.3	PLN	DTVPLN	-NPLN0401
06	KWNBTV	HAYES CENTER NE	371.6	PLN	DTVPLN	-NPLN0427
06	NEW	VERNAL UT	338.6	PLN	DTVPLN	-NPLN0447
06	NEW	CASPER WY	347.2	PLN	DTVPLN	-NPLN0453

Results for: 6N CO DENVER DTVPLN NPLN0400 PLN

	POPULATION	AREA (sq km)
within Noise Limited Contour	3184940	32522.3
not affected by terrain losses	3004687	29627.6
lost to NTSC IX	151088	2471.0
lost to additional IX by ATV	0	0.0
lost to all IX	151088	2471.0

Analysis of current record

Channel	Call	City/State	Application Ref. No.
18	KRMA-DT	DENVER CO	USERRECORD-01

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
17	KMGH-DT	DENVER CO	21.3	PLN	DTVPLN -DTVP0252
17	KMGH-TV	DENVER CO	20.8	CP MOD	BMPCDT -20000421AAV
18	KRMJ	GRAND JUNCTION CO	331.3	CP	BPET -20040227AAV
18	KWNB-DT	HAYES CENTER NE	349.8	PLN	DTVPLN -DTVP0316
18	KFNB-DT	CASPER WY	351.2	PLN	DTVPLN -DTVP0335
18	KFNB	CASPER WY	351.2	CP	BPCDT -20000110AAG
19	KTVD-DT	DENVER CO	21.4	PLN	DTVPLN -DTVP0342
19	KTVD	DENVER CO	20.8	CP MOD	BMPCDT -19981231KE

Total scenarios = 4

Result key: 1
 Scenario 1 Affected station 18
 Before Analysis

Results for: 18A CO DENVER USERRECORD01 APP

HAAT 178.0 m, ATV ERP 18.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2484514	12364.7
not affected by terrain losses	2463425	11268.2
lost to NTSC IX	0	0.0
lost to additional IX by ATV	180503	3269.2
lost to ATV IX only	180503	3269.2
lost to all IX	180503	3269.2

Potential Interfering Stations Included in above Scenario 1

17A CO DENVER	DTVPLN	DTVP0252	PLN
18A NE HAYES CENTER	DTVPLN	DTVP0316	PLN
19A CO DENVER	DTVPLN	DTVP0342	PLN

Result key: 2
 Scenario 2 Affected station 18
 Before Analysis

Results for: 18A CO DENVER USERRECORD01 APP

HAAT 178.0 m, ATV ERP 18.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	2484514	12364.7
not affected by terrain losses	2463425	11268.2

lost to NTSC IX	0	0.0
lost to additional IX by ATV	223740	3785.4
lost to ATV IX only	223740	3785.4
lost to all IX	223740	3785.4

Potential Interfering Stations Included in above Scenario 2

17A CO DENVER	DTVPLN	DTVP0252	PLN
18A NE HAYES CENTER	DTVPLN	DTVP0316	PLN
19A CO DENVER	BMPCDT	19981231KE	CP

Result key: 3
 Scenario 3 Affected station 18
 Before Analysis

Results for: 18A CO DENVER USERRECORD01 APP

HAAT 178.0 m, ATV ERP 18.0 kW		
	POPULATION	AREA (sq km)
within Noise Limited Contour	2484514	12364.7
not affected by terrain losses	2463425	11268.2
lost to NTSC IX	0	0.0
lost to additional IX by ATV	216225	3525.3
lost to ATV IX only	216225	3525.3
lost to all IX	216225	3525.3

Potential Interfering Stations Included in above Scenario 3

17A CO DENVER	BMPCDT	20000421AAV	CP
18A NE HAYES CENTER	DTVPLN	DTVP0316	PLN
19A CO DENVER	DTVPLN	DTVP0342	PLN

Result key: 4
 Scenario 4 Affected station 18
 Before Analysis

Results for: 18A CO DENVER USERRECORD01 APP

HAAT 178.0 m, ATV ERP 18.0 kW		
	POPULATION	AREA (sq km)
within Noise Limited Contour	2484514	12364.7
not affected by terrain losses	2463425	11268.2
lost to NTSC IX	0	0.0
lost to additional IX by ATV	215737	3601.4
lost to ATV IX only	215737	3601.4
lost to all IX	215737	3601.4

Potential Interfering Stations Included in above Scenario 4

17A CO DENVER	BMPCDT	20000421AAV	CP
18A NE HAYES CENTER	DTVPLN	DTVP0316	PLN
19A CO DENVER	BMPCDT	19981231KE	CP

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