

TECHNICAL STATEMENT
K231BQ GOLDEN, COLORADO, CH 231D
MARCO BROADCASTING CORPORATION
FCC FORM 349
JUNE 2015

This Technical Statement is made in support of a minor change application for FM translator station, K231BQ licensed to Golden, Colorado. K231BQ seeks to modify its current directional antenna system, raise its current height above sea level by 9 meters, relocate to a nearby existing tower which is also located on Lookout Mountain near Golden, Colorado 0.44 kilometers south of its current site. No other changes are being proposed. The following will show that the new proposed operation of K231BQ will meet all of the Commissions technical requirements for an FM translator station.

The new proposed operation of K231BQ specifies a maximum Effective Radiated Power of 250 watts. It will operate with a directional antenna using two Scala CA2-CP, dual polarized, custom directional, and using offset mounting, antenna system. The antenna will be mounted on an existing tower with an overall height of 18 meters above the ground. The antenna will be mounted with a Center of Radiation of 8 meters above the ground, and 2253 meters Above Mean Sea Level. The coordinates of this tower are located at N 39° 43' 45", W 105° 14' 08" (NAD 27).

Figure 1 is a detailed interference study conducted on channel 231D with these new proposed facilities. It shows that the new operation of K231BQ will not cause any interference to any existing or proposed FM stations, LPFM or other FM translators on any of the pertinent same channel or adjacent channels to channel 231, with the exception of KRKS-FM Lafayette, CO, facility ID 58631, on channel 234C, and K229BS

Lakewood, Colorado operating on channel 229D, facility ID 140231. The proposed operation of K231BQ on 231D is located within the protected 60 dB μ contour of 3rd and 2nd adjacent channel of KRKS-FM and K229BS.

Figure 2 shows the predicted F(50-50) field strength of KRKS-FM at the proposed K231BQ transmitter site is 77.8 dB μ . Therefore, the respective predicted interfering contour F(50-10) generated by the proposed K231BQ on channel 231D is an additional 40 dB μ or 117.8 dB μ .

Figure 3 shows the predicted F(50-50) field strength of K229BS at the proposed K231BQ transmitter site is 126.9 dB μ . Therefore, the respective predicted interfering contour F(50-10) generated by the proposed K231BQ on channel 231D is an additional 40 dB μ or 166.9 dB μ .

Since the interference contour towards K229BS is smaller than that of KRKS-FM, only the interference contour for KRKS-FM, or 117.8 dB μ , was studied further.

Figure 4 shows the coverage area for the 117.8 interference contour F(50-10) and shows that there is no population in the area of interference. The proposed 117.8 dB μ contour will only extend 143.5 meters, in only a few of the worse case azimuths in a westerly direction from the antenna system.

The applicant, Marco Broadcasting Corporation, respectfully requests a waiver of C.F.R. 74.1204(d) of the Commission's rules based on the fact that there is no population within the area of predicted interference. There are no homes nearby the proposed existing tower site, which is a privately owned 1/2 acre square wooded area, with private gated access. The transmitter building is uninhabited and does not have indoor plumbing. Should any unforeseen actual interference be caused, the licensee will immediately

reduce power or even cease broadcasting with K231BQ until such interference can be eliminated.

Figure 5 is the directional antenna data for the proposed Scala CA-2-CP composite directional antenna system.

Figure 6 is a tabulation of the distances to the pertinent contours used for interference calculations for K231BQ.

Figure 7 shows the proposed 60 dBμ of K231BQ will be completely contained inside of the current 60 dBμ predicted coverage contour of the station being rebroadcast, KDCO(AM) Golden, Colorado on channel 231D, facility ID 161314. The proposed operation of K231BQ will be considered a “fill-in” translator for KDCO, thus some of the maximum allowable ERP limits on some of the pertinent radials will be exceeded. However, the maximum ERP on any radial will not exceed 250 watts, thus this proposal is compliance with MERP’s rules, or with 74.1235(a).

Figure 8 shows that the proposed operation of K231BQ will 60 dBμ overlap with the currently licensed operation of K231BQ as required.

It was found that the new proposed operation of K231BQ Golden, Colorado on channel 231D, will satisfy all of the required commission rules and regulations for an FM translator station.

FIGURE 1 - DETAILED CHANNEL INTERFERENCE STUDY

K231BQ GOLDEN, CO, CH. 231D

REFERENCE
39 43 45.0 N.
105 14 08.0 W.CH# 231D - 94.1 MHz, Pwr= 0.25 kW DA, HAAT= 227.1 M, COR= 2253 M
Average Protected F(50-50)= 19.72 km
Standard DirectionalDISPLAY DATES
DATA 06-16-15
SEARCH 06-17-15

CH CITY	CALL	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT* (in km)
234C Lafayette	KRKS-FM	LIC DCN CO	345.2 165.1	39.38 BMLH19981009KC	40 04 19.0 105 21 14.0	100.000 300	11.3 2442	78.6 Salem Media Of Colorado, I	21.5	-39.3*
232C Colorado Springs	KILO	LIC _C_ CO	163.5 343.7	113.87 BLH20070426AAL	38 44 44.0 104 51 42.0	79.000 670	145.6 2922	97.8 Colorado Springs Radio Bro	-38.6*	4.3
231D Golden	K231BQ	LIC DC_ CO	347.7 167.7	0.44 BLFT20150128AUQ	39 43 59.0 105 14 12.0	0.250	33.5 2244	10.0 Marco Broadcasting Corpora	-36.0*	-21.1*
229D Lakewood	K229BS	LIC DC_ CO	0.0 180.0	0.03 BLFT20100719AFS	39 43 46.0 105 14 08.0	0.099 218	0.7 2246	8.7 Hunt Broadcasting Lic	-3.8*	-8.7*
231D Boulder	K231AA	LIC _CN CO	0.2 180.2	26.18 BLFT19960111TK	39 57 54.0 105 14 05.0	0.205 -133	22.6 1719	6.7 Citi casters Licenses, Inc.	-3.2	3.2
230L1 Aurora	KETO-LP	CP ____ CO	94.3 274.5	31.14 BMPL20150518AEC	39 42 28.0 104 52 24.1	0.100 25	1687	4.4 Ethiopi an Communi ty Televi	0.3	
230L1 Aurora	KCHS-LP	CP ____ CO	94.3 274.5	31.14 BMPL20150518AED	39 42 28.0 104 52 24.1	0.100 25	1687	4.4 Christ's Church Apostolic	0.3	
230A Fri sco	KYSL	LIC _CN CO	255.9 75.4	77.87 BLH19940808KA	39 33 22.0 106 06 53.0	0.560 324	61.1 3549	38.2 Krystal Broadcasting, Inco	6.1	26.1
230L1 Castle Rock	NEW	CP ____ CO	121.5 301.8	47.19 BNPL20131113BPV	39 30 24.0 104 46 02.0	0.100 30	1892	18.3 Calvary Chapel , Castle Roc	18.5	
230A Lovel and	KCWA	LIC ZCX CO	3.1 183.1	85.00 BLH20101214ACL	40 29 37.0 105 10 53.0	0.580 319	54.8 2098	33.9 Way Media, Inc.	21.9	44.0
231C2 Phi ppsburg	KEZZ	LIC NCX CO	300.3 119.3	143.00 BLH20090522ACV	40 22 03.0 106 41 28.0	1.750 380	106.4 3107	41.3 Blizzard Broadcasting li c	26.1	81.8
229D Nederl and	K229AC	LIC _E_ CO	318.2 138.0	36.40 BLFT20061218ACR	39 58 22.0 105 31 13.0	0.028 -188	0.4 2655	4.1 Boulder Communi ty Broadcas	28.2	27.1
230D Monument	K230BO	CP DH_ CO	164.2 344.4	63.83 BMPFT20131216DVO	39 10 33.0 105 02 03.0	0.250	9.2 2823	6.5 Way Media , Inc.	47.9	52.8
232C3 Wellington	KMAX-FM	LIC _CX CO	3.3 183.4	133.35 BLH20021101AAV	40 55 41.0 105 08 36.0	8.700 168	76.2 2131	51.1 Townsquare Media Of Ft. Co	48.6	76.0
229C2 Deer Trail	KIIQ	RSV-A ____ CO	96.7 277.4	103.09	39 36 57.0 104 02 35.0	50.000 150	5.9 1769	51.5 Kona Coast Radio, Lic	82.6	50.7
232D Breckenri dge	K232AC	LIC DHN CO	245.0 64.5	70.42 BLFT129	39 27 35.0 105 58 40.0	0.048 505	9.7 3840	6.0 Summi t Public Radio And Tv	51.2	53.8
231C Montrose	KKXK	LIC _CY CO	234.1 52.6	259.21 BLH19961009KC	38 20 16.0 107 38 23.0	100.000 574	198.2 3094	92.8 Ccr-montrose Iv, Lic	52.6	143.5
284D Dillon	KKVM-FM3	LIC DV_ CO	261.3 80.8	70.41 BLFTB20090115AFD	39 37 51.0 106 02 47.0	0.175	46.6 2786	131.8 Vail Radio Partners, Lic	9.5R	60.9M
228D Woodl and Park	K228EM	LIC _C_ CO	170.0 350.1	83.69 BLFT20070823AEI	38 59 12.0 105 04 04.0	0.015 34	0.3 2774	12.0 Cheyenne Mountai n Public B	77.4	71.6
229C2 Deer Trail	KIIQ	APP _CX CO	107.3 288.2	129.38 BPH20150406ACS	39 22 30.0 103 48 05.0	25.500 212	5.9 1917	52.4 Kona Coast Radio, Lic	109.5	76.6
233D Greel ey	K233CH	CP DC_ CO	28.8 209.1	89.95 BNPFT20130301AGP	40 26 15.0 104 43 25.0	0.230 69	1.1 1517	10.4 Kevi n J. Youngers	76.8	79.3
228D Fort Coll ins	K228EZ	CP DC_ CO	2.0 182.0	90.79 BPFT20120821AAD	40 32 47.0 105 11 53.0	0.010 379	0.1 2198	8.2 Fi resi de Educati onal Group	82.5	82.6
228D Fort Coll ins	K228EZ	LIC DV_ CO	2.0 182.0	90.79 BLFT20111005AJG	40 32 47.0 105 11 53.0	0.009 379	0.0 2198	3.1 Fi resi de Educati onal Group	82.5	87.6
284C1 Vail	KKVM	LIC _C_ CO	264.6 83.8	104.40 BMLH20031119AII	39 38 05.0 106 26 47.0	100.000 102	46.6 3015	131.8 Vail Radio Partners, Lic	21.5R	82.9M
231C1 Scottsbl uff	KNEB-FM	LIC _CN NE	30.4 211.4	255.38 BLH19810904AB	41 42 04.0 103 40 49.0	100.000 207	156.3 1512	59.4 Nebraska Rural Radi o Assoc	86.6	164.2

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	Page # 2 *IN* (Overlap in km)	*OUT*
228D Leadville	K228AG	LIC DHN CO		237.9 57.3	96.32 BLFT19790511IC	39 15 54.0 106 10 54.0	0.107 546	0.1 4011	6.6 Carbondale	87.5 Community	87.3 Access
234D Colorado Springs	K234AJ	LIC _C_ CO		162.3 342.5	98.22 BLFT20101201AQE	38 53 10.0 104 53 24.0	0.019 -107	0.3 2213	3.7 Educational	90.7 Communications	91.1
230L1 Colorado Springs	KCMJ-LP	CP CO		158.2 338.5	112.46 BNPL20131113BII	38 47 17.4 104 45 10.2	0.100 -27	1813	96.6 Colorado Media	101.5 Justice Fou	
229C2 Salida	KSBV	LIC _CX CO		205.4 24.9	157.39 BLH20020828AAQ	38 26 47.0 106 00 37.0	1.000 830	2.2 3572	57.7 Arkansas Valley	148.4 Broadcasti	98.4
284A Calhan	KKCS	LIC NCX CO		135.4 316.0	113.53 BMLH20131204AJQ	38 59 57.0 104 18 47.0	1.550 198	46.6 2192	131.8 United States	9.5R Cp, Lic	104.0M
229A Limon	KIIQ	LIC _CX CO		110.7 291.7	142.71 BLH20041025AEJ	39 15 60.0 103 41 15.0	1.000 -32	1.6 1649	10.2 Kona Coast Radio,	127.4 Lic	132.3

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= West Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
***affixed to 'IN' or 'OUT' values = site inside restricted contour.

* No actual interference will be caused to 2nd adjacent channel KRKS-FM
Lafayette, CO or K229BS Golden, CO since the predicted 117.8 DBU contour will
not cover any population. See the Technical Statement for details.

FIGURE 2 - KRKS-FM 77.8 DBU CONTOUR AT PROPOSED SITE
K231BQ GOLDEN, CO, CH. 231D

Coverage Study - NGDC 30 SEC
06-17-2015

KRKS-FM CH234 C , 100.0 kW, 300.0M HAAT, 2442.0M COR AMSL
Service Contour = 78 dBu. Population = 754,948

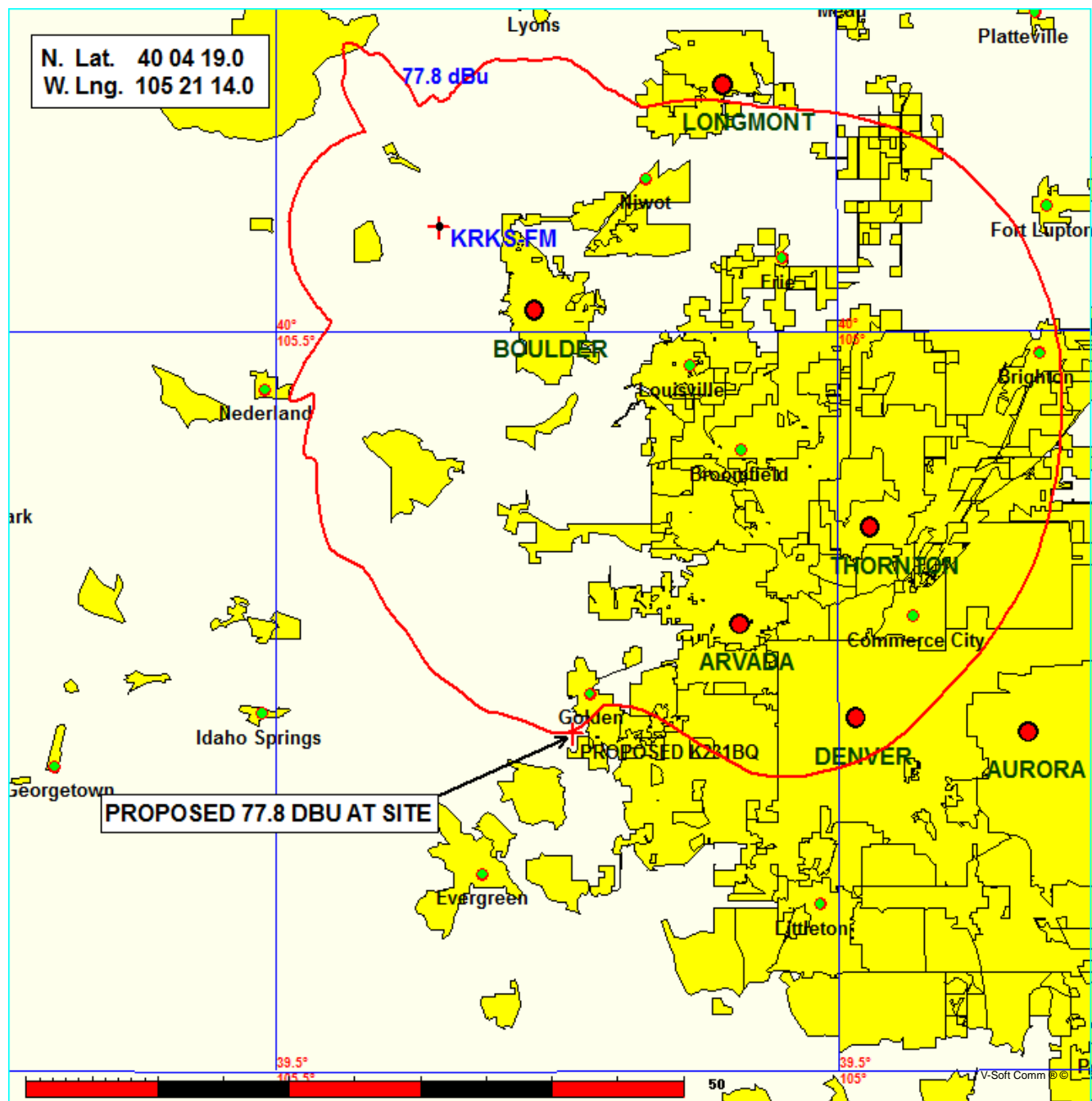


FIGURE 2 - KRKS-FM 77.8 DBU CONTOUR AT PROPOSED SITE
K231BQ GOLDEN, CO, CH. 231D

Coverage Study - NGDC 30 SEC
06-17-2015

K229BS CH229 D , 0.099 kW, 218.2M HAAT, 2246.0M COR AMSL
Service Contour = 127 dBu. Population =

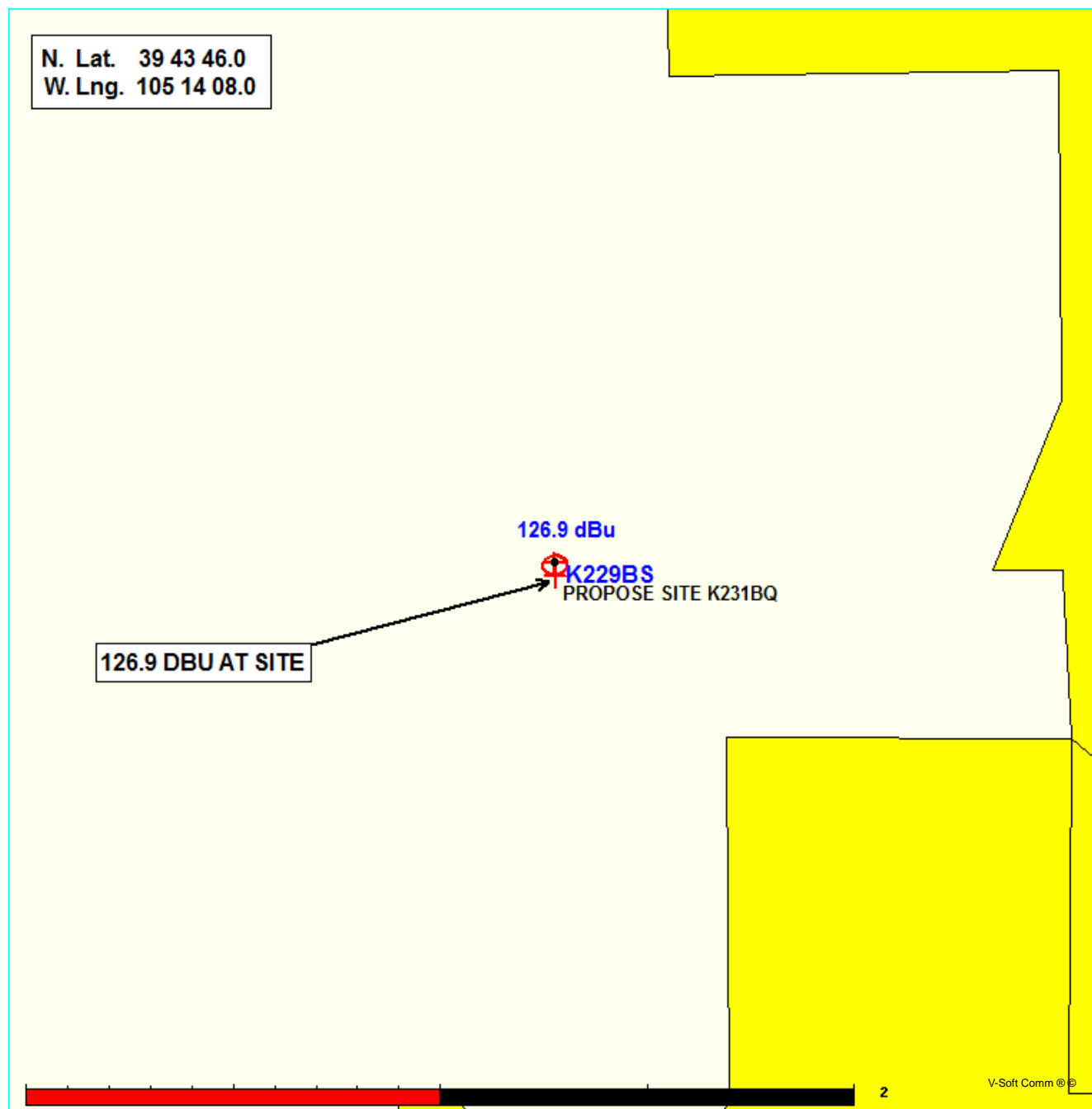


FIGURE 4 - PREDICTED 117.8 DBU CONTOUR
K231BQ GOLDEN, CO, CH. 231D

Coverage Study - NGDC 30 SEC
06-17-2015

K231BQ CH231 D , 0.25 kW, 227.1M HAAT, 2253.0M COR AMSL
Interference Contour = 118 dBu. Population = 0

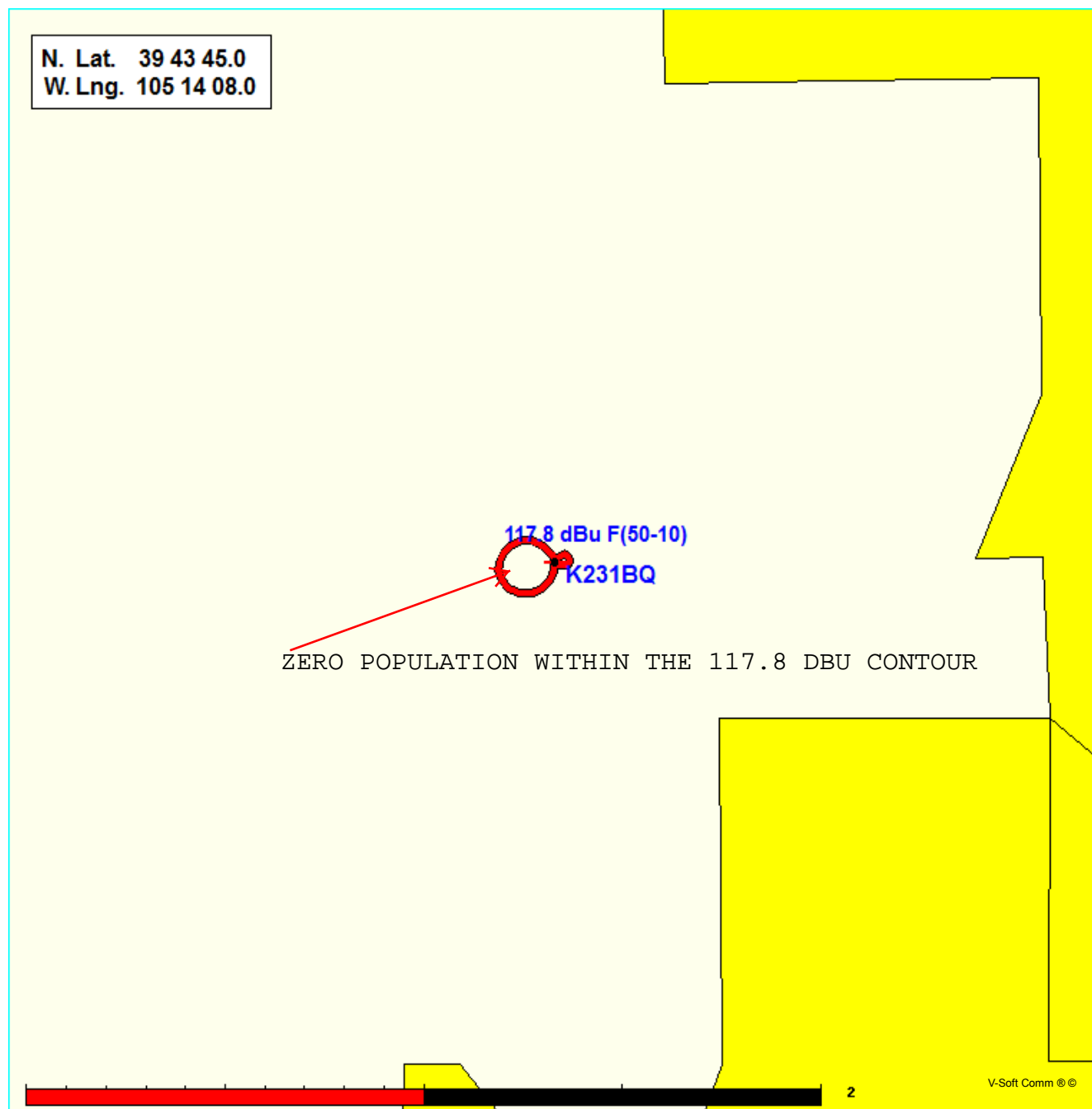


FIGURE 5 - DIRECTIONAL ANTENNA DATA

K231BQ

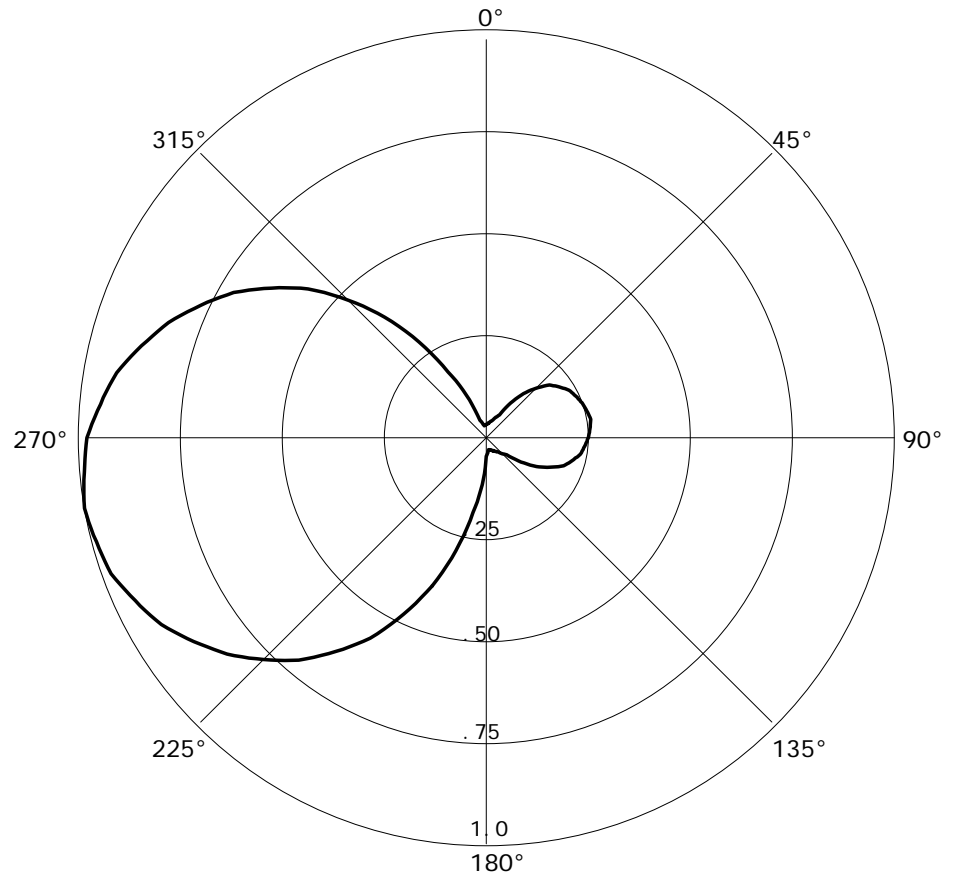
06-17-2015

RMS(V)= .484

SCALA CA-2-CP

Graph is Relative Field

Azi	Field	dBk	kW
000	0.032	-35.918	0.000
010	0.037	-34.657	0.000
020	0.046	-32.765	0.001
030	0.065	-29.762	0.001
040	0.142	-22.975	0.005
050	0.202	-19.914	0.010
060	0.234	-18.636	0.014
070	0.250	-18.062	0.016
080	0.260	-17.721	0.017
090	0.250	-18.062	0.016
100	0.234	-18.636	0.014
110	0.202	-19.914	0.010
120	0.142	-22.975	0.005
130	0.065	-29.762	0.001
140	0.046	-32.765	0.001
150	0.037	-34.657	0.000
160	0.032	-35.918	0.000
170	0.030	-36.478	0.000
180	0.045	-32.956	0.001
190	0.187	-20.584	0.009
200	0.388	-14.244	0.038
210	0.570	-10.903	0.081
220	0.715	-08.934	0.128
230	0.829	-07.650	0.172
240	0.920	-06.745	0.212
250	0.979	-06.205	0.240
260	1.000	-06.021	0.250
270	0.979	-06.205	0.240
280	0.920	-06.745	0.212
290	0.829	-07.650	0.172
300	0.715	-08.934	0.128
310	0.570	-10.903	0.081
320	0.388	-14.244	0.038
330	0.187	-20.584	0.009
340	0.045	-32.956	0.001
350	0.030	-36.478	0.000



Contour.out

N. Lat. = 394345.0 W. Lng. = 1051408.0
 HAAT and Distance to Contour,
 FCC, FM 2-10 Mi, 51 pts Method - NGDC 30 SEC

FIGURE 6 - TABULATION OF DISTANCES TO CONTOURS

Azi.	AV EL	HAAT	dBk	60-F5	40-F1	54-F1	117.8-F1	166.9-F1
000	1844.3	408.7	-35.92	3.17	14.78	5.49	0.00	0.00
010	1810.8	442.2	-34.66	3.66	17.27	6.20	0.01	0.00
020	1801.0	452.0	-32.77	4.41	19.88	7.36	0.01	0.00
030	1746.3	506.7	-29.76	5.87	25.18	9.73	0.01	0.00
040	1722.7	530.3	-22.97	10.44	39.37	16.07	0.02	0.00
050	1711.9	541.1	-19.91	13.04	47.83	20.19	0.03	0.00
060	1694.5	558.5	-18.64	14.48	52.43	22.32	0.03	0.00
070	1707.3	545.7	-18.06	14.87	53.42	22.81	0.04	0.00
080	1711.3	541.7	-17.72	15.15	54.17	23.19	0.04	0.00
090	1716.6	536.4	-18.06	14.72	52.87	22.59	0.04	0.00
100	1739.6	513.4	-18.64	13.87	49.80	21.30	0.03	0.00
110	1779.8	473.2	-19.91	12.43	44.02	18.87	0.03	0.00
120	1812.1	440.9	-22.97	9.92	35.36	14.41	0.02	0.00
130	1798.4	454.6	-29.76	5.72	23.94	9.47	0.01	0.00
140	1792.4	460.6	-32.77	4.42	20.07	7.40	0.01	0.00
150	1837.6	415.4	-34.66	3.61	16.55	6.09	0.01	0.00
160	1934.0	319.0	-35.92	2.99	13.15	5.11	0.00	0.00
170	2146.7	106.3	-36.48	2.14	7.33	3.15	0.00	0.00
180	2174.0	79.0	-32.96	2.39	7.67	3.41	0.01	0.00
190	2236.2	16.8	-20.58	3.04	9.83	4.29	0.03	0.00
200	2293.9	-40.9	-14.24	4.37	13.97	6.24	0.06	0.00
210	2224.3	28.7	-10.90	5.35	17.49	7.56	0.08	0.00
220	2242.5	10.5	-8.93	5.99	19.90	8.54	0.10	0.00
230	2289.7	-36.7	-7.65	6.45	21.54	9.23	0.12	0.00
240	2382.5	-129.5	-6.74	6.80	22.75	9.74	0.13	0.00
250	2401.4	-148.4	-6.20	7.01	23.50	10.04	0.14	0.00
260	2321.7	-68.7	-6.02	7.09	23.76	10.15	0.14	0.00
270	2256.0	-3.0	-6.20	7.01	23.50	10.04	0.14	0.00
280	2186.2	66.9	-6.74	10.25	34.43	14.25	0.13	0.00
290	2284.0	-31.0	-7.65	6.45	21.54	9.23	0.12	0.00
300	2386.1	-133.1	-8.93	5.99	19.90	8.54	0.10	0.00
310	2393.6	-140.6	-10.90	5.35	17.49	7.56	0.08	0.00
320	2347.6	-94.6	-14.24	4.37	13.97	6.24	0.06	0.00
330	2254.4	-1.4	-20.58	3.04	9.83	4.29	0.03	0.00
340	2139.7	113.3	-32.96	2.76	9.27	4.07	0.01	0.00
350	1968.4	284.6	-36.48	2.80	12.06	4.69	0.00	0.00

Ave EI = 2030.26 M HAAT= 222.74 M AMSL= 2253

K231BQ

BLFT20150128AUQ

Latitude: 39-43-45 N

Longitude: 105-14-08 W

ERP: 0.25 kW

Channel: 231

Frequency: 94.1 MHz

AMSL Height: 2253.0 m

Elevation: 2229.584 m

Horiz. Pattern: Directional

Vert. Pattern: No

Prop Model:

FIGURE 7 FILL-IN MAP

KBUD(AM) GOLDEN, CO 1550 KHZ

0.99 KW DAY ND 0.35 KW NIGHT DA

K231BQ GOLDEN, CO 94.1 MHZ

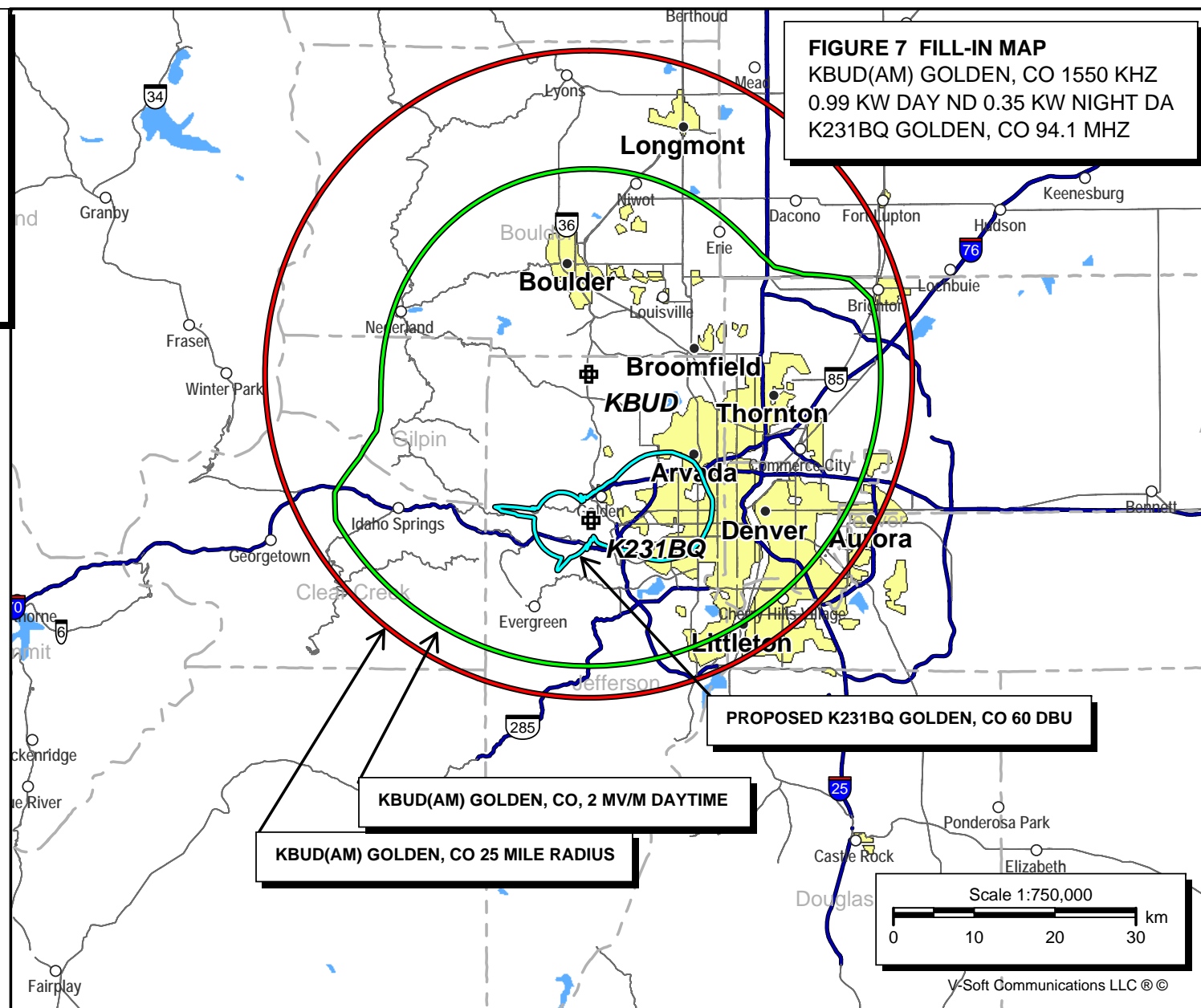


FIGURE 8 - PRESENT AND PROPOSED 60 DBU
K231BQ GOLDEN, CO, CH. 231D

Coverage Study - NGDC 30 SEC
06-17-2015

