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ELECTROMAGNETIC FIELD MEASUREMENTS AT DEER POINT FM & TV TRANSMITTER SITE

Prepared for Scripps Broadcasting Holdings LLC

KRVB, 94.9 MHz

NAMPA, IDAHO

FCC Facility ID Number 17397

November 2016

INTRODUCTION

In May and November of 2013 and again in November 2016 Hatfield & Dawson was retained to measure the radiofrequency power density around the FM & TV transmitting facility at Deer Point, located northeast of Boise, ID. The attached report was issued for the November 2016 set of measurements.

In November 2016 KRVB replaced its antenna system with a Shively 6810, 5 bay, 0.75λ -spaced antenna. KRVB's effective radiated power level and the antenna height above ground remain the same. The radiofrequency power density measurements were made between the hours of 7:00 PM and 8:00 PM on 6 November 2016. Measurements were made by Stephen S. Lockwood, P.E. using the same equipment and procedures outlined in the May 2013 report¹. All FM and TV transmitters at the site were reportedly operating at 100% of licensed power as the measurements were made. The attached map summarizes the measurements. The measurements show continued progress of reducing the RF exposure at ground level. However, this site is still classified as a controlled site as there are still some areas that exceed the public MPE. The RF exposure conditions and conclusion remain the same as outlined in the May 2013 report that is attached to this report.

STATEMENT OF ENGINEER

This Engineering Report regarding radiofrequency field measurements around the Deer Point FM and TV transmitter site located northeast of Boise, Idaho, has been prepared by the undersigned or under my direct supervision. All representations contained herein are true to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am a partner in the firm of Hatfield and Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington, Alaska, and Wyoming.

Stephen S. Lockwood, P.E.

18 November 2016



¹ The Narda equipment was calibrated December 2015

AREA THAT EXCEEDS FCC
PUBLIC/UNCONTROLLED MPE

DEER POINT
LLC TOWER

SITE BOUNDARY MARKED
BY 4"x4" POST WITH RF
CAUTION SIGNS AND NO
TRESPASSING

SUTRO I
TOWER

SUTRO II
TOWER

FISHER
BROADCASTING
TOWER

KING
BROADCASTING
TOWER

NOT TO SCALE

Bob Allen, H&D

5/16/2013 2:41 PM

deer point meas.dwg

HATFIELD & DAWSON
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DEER POINT TRANSMITTER SITE
BOISE, ID 11/2016

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ELECTROMAGNETIC FIELD MEASUREMENTS AT DEER POINT FM & TV TRANSMITTER SITE

Prepared for Peak Broadcasting

KSAS, 103.5 MHz

BOISE, IDAHO

November 2013

INTRODUCTION

In May of 2013 Hatfield & Dawson was retained to measure the radiofrequency power density measurements were made around the FM & TV transmitting facility at Deer Point, located northeast of Boise, ID. The attached report was issued for this set of measurements.

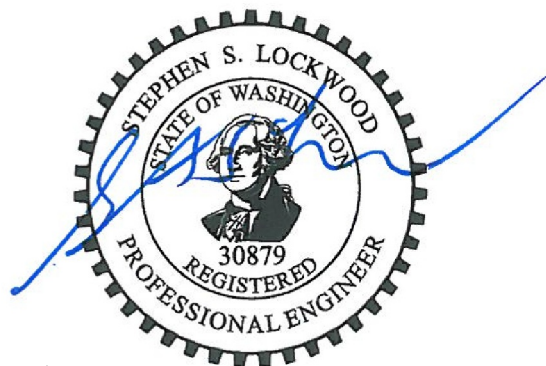
In October 2013 KSAS changed frequencies from 103.3 MHz to 103.5 MHz. The power level and the antenna remain the same. The radiofrequency power density was measured. These measurements were made between the hours of 12:00 AM and 1:00 AM on 29 October 2013. Measurements were made by Stephen S. Lockwood, P.E. using the same equipment and procedures outlined in the May report. All FM and TV transmitters at the site were reportedly operating at 100% of licensed power as the measurements were made. The attached map summarizes the measurements. The RF exposure conditions and conclusion remain the same as outlined in the May report.

STATEMENT OF ENGINEER

This Engineering Report regarding radiofrequency field measurements around the Deer Point FM and TV transmitter site located northeast of Boise, Idaho, has been prepared by the undersigned or under my direct supervision. All representations contained herein are true to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am a partner in the firm of Hatfield and Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington, Alaska, and Wyoming.

Stephen S. Lockwood, P.E.

1 November 2013

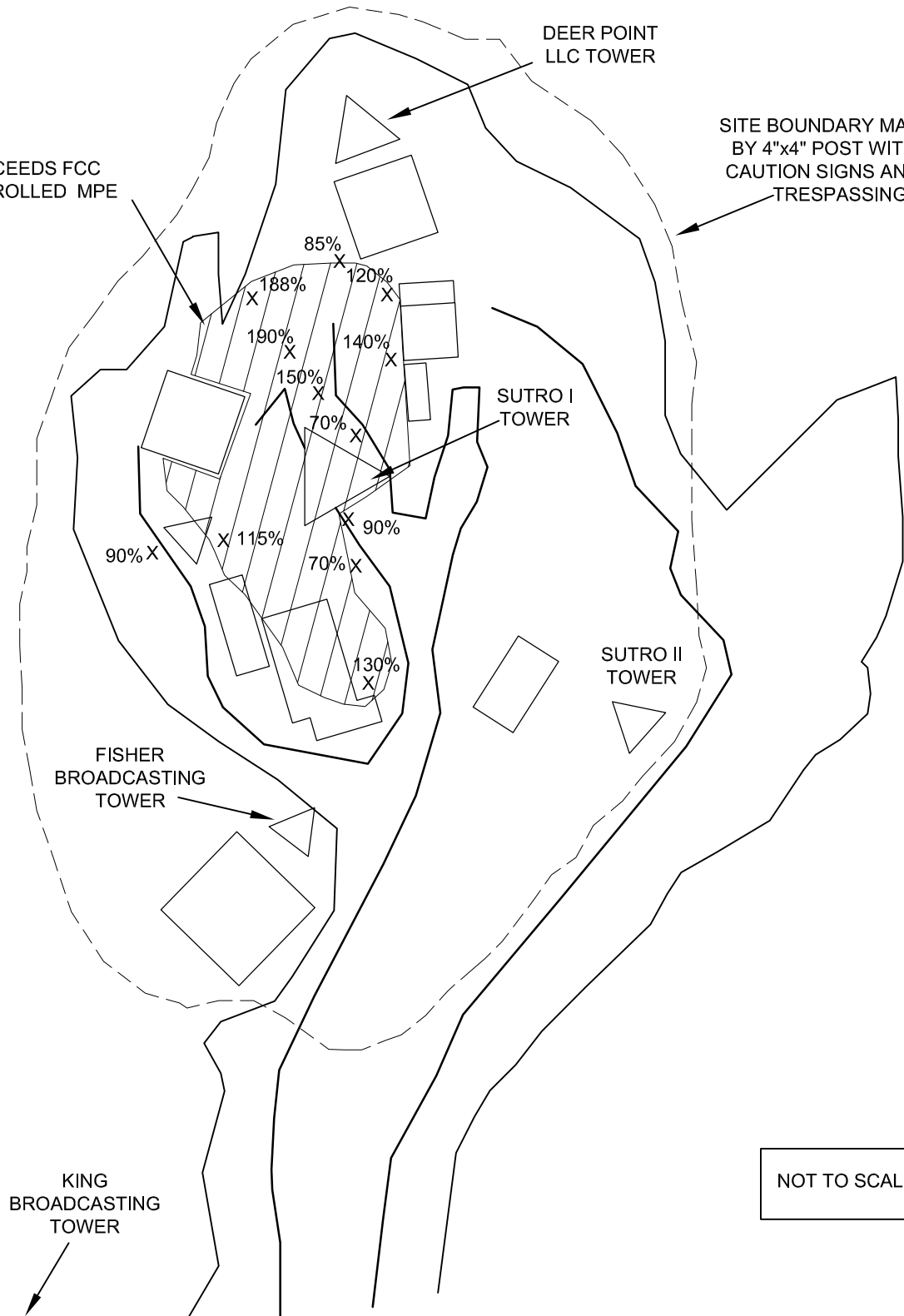


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AREA THAT EXCEEDS FCC
PUBLIC/UNCONTROLLED MPE

DEER POINT
LLC TOWER

SITE BOUNDARY MARKED
BY 4"x4" POST WITH RF
CAUTION SIGNS AND NO
TRESPASSING



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ELECTROMAGNETIC FIELD MEASUREMENTS AT DEER POINT FM & TV TRANSMITTER SITE

BOISE, IDAHO

May 2013

INTRODUCTION

On 6 May 2013, radiofrequency power density measurements were made around the FM & TV transmitting facility at Deer Point, located northeast of Boise, ID. The measurements were made between the hours of 9:00 AM and 11:00 AM. Measurements were made by James B. Hatfield, P.E. and Stephen S. Lockwood, P.E. FM and TV transmitters at the site were reportedly operating at 100% of licensed power as the measurements were made.

Over the past decade, significant progress has been made to reduce the RF exposure levels at this site. Reports from the 1990s showed that much of the site had areas that exceeded the Occupational/Controlled Environments Maximum Permissible Exposure (MPE) limit.¹ This is no longer the case as only a limited area now exceeds the General Population/Uncontrolled Environment MPE. This improvement is due to several factors. The primary reasons are that several broadcasters installed new facilities with antennas designed to reduce ground level RF exposure and the end of analog TV. As other broadcast facilities reach the end of their service lifetime and are upgraded this trend will continue.

The high power FM and TV facilities located at Deer Point are:

High Power FM on Sutro I Tower

Call Status	City State	FCC File No.	Channel Freq.	ERP (kW) HAAT (m)	Latitude Longitude	Bearing deg-True	Distance kilometers
KOAY LIC	MIDDLETON ID	BLED000625AEJ	204C1 88.7	6.000 791.0	43-45-18 116-05-52	0.0	0.00
KTSY LIC	CALDWELL ID	BLED920831KA	208C1 89.5	8.300 791.0	43-45-18 116-05-52	0.0	0.00
KBXL LIC	CALDWELL ID	BLH021106ABA	231C 94.1	40.000 803.0	43-45-18 116-05-52	0.0	0.00
KRVB LIC	NAMPA ID	BMLH050511ABL	235C 94.9	49.000 821.0	43-45-18 116-05-52	0.0	0.00
KDBI LIC	EMMETT ID	BMLH030121ADD	270C 101.9	57.000 772.0	43-45-18 116-05-52	0.0	0.00

¹ **CFR 47 §1.1310 Radiofrequency Radiation Exposure Limits** (Occupational/Controlled Environments).

KSAS-FM	CALDWELL	277C	54.000	43-45-18	0.0	0.00
LIC	ID BLH961121KB	103.3	786.0	116-05-52		
KAWO	BOISE	282C	52.000	43-45-18	0.0	0.00
LIC	ID BLH870128KC	104.3	786.0	116-05-52		
KJOT	BOISE	286C	53.000	43-45-18	0.0	0.00
LIC	ID BMLH050511ABI	105.1	789.0	116-05-52		
KCIX	GARDEN CITY	290C	49.000	43-45-18	0.0	0.00
LIC	ID BLH850115LP	105.9	823.0	116-05-52		
KTHI	CALDWELL	296C	52.000	43-45-18	0.0	0.00
LIC	ID BLH050511ABG	107.1	786.0	116-05-52		
KXLT-FM	EAGLE	300C	45.000	43-45-18	0.0	0.00
LIC	ID BLH940825KC	107.9	818.0	116-05-52		

High Power FM on Sutro II Tower

Call	City	Channel	ERP (kW)	Latitude	Bearing	Distance
Status	State	FCC File No.	Freq.	Longitude	deg-True	kilometers
KSRV-FM	ONTARIO	241C	49.000 DA	43-45-18	35.5	0.04
LIC	OR	BLH061130AAV	96.1	116-05-51	SS	

High Power FM on Deer Point LLC Tower

Call	City	Channel	ERP (kW)	Latitude	Bearing	Distance
Status	State	FCC File No.	Freq.	Longitude	deg-True	kilometers
KBSU-FM	BOISE	212C	17.500	43-45-21	334.2	0.10
LIC	ID BLED010917AAP	90.3	827.0	116-05-54		
KBSX	BOISE	218C1	3.800	43-45-21	334.2	0.10
LIC	ID BLED010917AAO	91.5	827.0	116-05-54		
KIZN	BOISE	222C	48.000	43-45-21	334.2	0.10
LIC	ID BLH010831AAH	92.3	828.0	116-05-54		
KTIK-FM	NEW PLYMOUTH	226C	48.000	43-45-21	334.2	0.10
LIC	ID BLH010831AAG	93.1	828.0	116-05-54		
KKGL	NAMPA	245C	48.000	43-45-21	334.2	0.10
LIC	ID BLH010831AAF	96.9	828.0	116-05-54		
KQFC	BOISE	250C	48.000	43-45-21	334.2	0.10
LIC	ID BLH020515AFO	97.9	828.0	116-05-54		

High Power TV on Sutro I Tower

Call	City	Chan	ERP (kW)	Latitude	Bearing	Dist
Status	St	FCC File No.	Zone	Longitude	deg-True	(km)
KNIN-TV	CALDWELL	10	25.000 N	43-45-18	0.0	0.00
LIC	ID BLCDDT11007AEB	II	818 W	116-05-52		

KTRV-TV LIC	NAMPA ID BLCDT50516ATS	13 II	17.000 829	N W	43-45-18 116-05-52	0.0	0.00
KCLP-CA LIC	BOISE ID BLTTA60316AJP	18+ II	60.000 0	N W	43-45-18 116-05-52	0.0	0.00
K31FD LIC	BOISE ID BLTTA11128ACV	31N II	72.400 0	N W	43-45-18 116-05-52	0.0	0.00

High Power TV on Deer Point LLC Tower

Call Status	City St FCC File No.	Chan Zone	ERP (kW) HAAT (m)	Latitude Longitude	Bearing deg-True	Dist (km)
KBOI-TV LIC	BOISE ID BLCDT20906AAZ	9 II	25.000 862	N W	43-45-21 116-05-54	0.10
KAID LIC	BOISE ID BLEDT70712ABY	*21 II	725.000 858	N W	43-45-21 116-05-54	0.10
KAID LIC	BOISE ID BLEDT20719ABH	*21 II	725.000 0	N W	43-45-21 116-05-54	0.10
KAID LIC	BOISE ID BLEDT20719ABH	*21 II	725.000 858	N W	43-45-21 116-05-54	0.10
KIVI-TV LIC	NAMPA ID BLCDT60724ADJ	24 II	589.000 858	N W	43-45-21 116-05-54	0.10
KYUU-LD LIC	BOISE ID BLDTL20906ABB	28 II	8.800 0	N W	43-45-21 116-05-54	0.10

High Power FM on King Broadcasting Tower

Call Status	City St FCC File No.	Chan Zone	ERP (kW) HAAT (m)	Latitude Longitude	Bearing deg-True	Dist (km)
KTVB LIC	BOISE ID BLCDT00628AVP	7 II	42.100 806	N W	43-45-16 116-05-56	0.11

SITE ACCESS AND LOCATION

The Deer Point transmitter site is located within the Boise National Forest. This site is not accessible to the public and is a controlled site. There is a locking gate on the access road to the site. This gate is posted with "No Trespassing" and RF Exposure signage. The site is located in extremely rugged terrain. The transmitter site and gate are posted with the appropriate RF Exposure caution signs. All station personnel and contractors are required to follow safety procedures before any work is commenced on the site.

OET Bulletin No. 65 includes the following discussion of access control:

Hatfield & Dawson Consulting Engineers

Restricting access is usually the simplest means of controlling exposure to areas where high RF levels may be present. Methods of doing this include fencing and posting such areas or locking out unauthorized persons in areas, such as rooftop locations, where this is practical. There may be situations where RF levels may exceed the MPE limits for the general public in remote areas, such as mountain tops, that could conceivably be accessible but are not likely to be visited by the public. In such cases, common sense should dictate how compliance is to be achieved. If the area of concern is properly marked by appropriate warning signs, fencing or the erection of other permanent barriers may not be necessary.

The Deer Point transmitter facility is a remote mountain top site. There are no other permanent users of this site. Any other individuals present on this site who are not associated with the communications facilities are trespassing. The Forest Service maintains the road to the mountain top and, as noted above, has a posted and locked gate at the entrance from the main road.

The boundary of the FM & TV transmitter site is clearly demarcated by posted signs. These signs are mounted on 12 foot high 4"x4" posts spaced at spaced at approximately 50' intervals. This is a difficult location for fence maintenance. The seasonal snow pack depth is typically greater than 8 feet. Snow of this depth can destroy the chain-link fabric on a fence due to the freezing of large chunks of snow and ice on the fence.

Any member of the general public in the situation of being exposed to excessive RF fields at this site would have to be a determined trespasser and would have to have passed and ignored a number of caution signs. Any trespassing would not happen casually and would be done in a willful manner. The site is surrounded by thick brush and steep terrain which limits access on the north and west sides. This site is not a location that is visited by accident, and it is not on the way to any other attractive nuisance or recreation area. During the operations of the adjacent Bogus Basin Mountain Recreation Area access to this area is classified as "out of bounds" and is controlled by resort personnel. There is no history of trespass through the area for out of bounds skiing or snowboarding.

MEASUREMENT PROCEDURES

Measurement procedures outlined in **OET BULLETIN 65, (EDITION 97-01)**, [OET 65] **“Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields”**, **ANSI/IEEE Std C95.3-2002, IEEE Recommended Practice for the Measurement and Computation of Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300GHz**, and **NCRP Report No. 119, “A Practical Guide to the Determination of Human Exposure to Radiofrequency Fields”** were used for the measurements taken at the Deer Point site. Spatially averaged measurements were made at the points where the highest fields were found.

According to the ANSI C95.3 guidelines (reaffirmed in OET 65), measurements to determine exposure compliance are to be made at distances 20 cm or greater from any object. This is to ensure that the measurements are not contaminated by re-radiation from conductive objects.

TEST EQUIPMENT USED

NARDA Model 8718B Electromagnetic Radiation Survey Meters with a NARDA Model A8742D and B8742D Isotropic Shaped Electric Field Probes were used to make the measurements. The NARDA B8742 series probe provides an output proportional to **CFR 47 §1.1310 Radiofrequency Radiation Exposure Limits**. The A8742D is for Occupational/Controlled environments and the B8742D is for General Population/Uncontrolled environments. This measurement system display in percent of the maximum permissible exposure (MPE) over a frequency range from 300 kHz to 3 GHz. The isotropic response of the NARDA 8742 probe series is +/-0.75dB.

The NARDA Model 8718B Electromagnetic Radiation Survey Meter allows for accurate and repeatable spatially averaged measurements through the use of its time averaging feature. The NARDA diode probes, such as the Model 8742, are designed to provide signal detection on a square law basis and yields accurate readings of fields from multiple sources. Other available measurement devices, such as those manufactured by Holaday and Wandel & Golterman, use linear detection and square the signals after adding. If there are two signals of roughly equal intensity, $E_1 + E_2$, the desired summation is $(E_1)^2 + (E_2)^2$. The result obtained by squaring the

signals after addition is $(E_1)^2 + (E_1)(E_2) + (E_2)^2$. The $(E_1)(E_2)$ term results in a measurement error. For this reason the most accurate measurements of RF fields using diode detection are provided by use of probes such as the NARDA 8742D probe that utilize square law detection. Diode probe errors are also discussed in “*Multiple-Source, Multiple Frequency Error of an Electric Field Meter*” (Randa and Kanda).

Item	Make/Model	Serial Number	Calibration Date
RF Survey Meter	Narda 8718B	06037	March 2013
RF Survey Meter	Narda 8718B	01194	April 2013
Isotropic Shaped Electrical Field Probe (FCC General Population/Uncontrolled): 300 kHz-3 GHz	Narda A8742D	01004	April 2013
Isotropic Shaped Electrical Field Probe (FCC Occupational/Controlled): 300 kHz-3 GHz	Narda B8742D	05003	March 2013

MEASURED FIELDS

The measured fields around the FM transmitter site are shown on the site maps as a percentage of the General Population/Uncontrolled Environment MPE limits. The measured field at each location is shown as the spatially averaged field. Each of these measurements is an average of multiple spatially averaged measurements at the same point where the observer is at a point north, east, south and west of the point. This is to minimize the effect of reflections from the observer.²

There is only one area which was found to exceed the General Population/Uncontrolled Environment MPE limits. That is the area (shown on the map) under the Sutro I Tower between

² See Richard A. Tell and James B. Hatfield “The Other Side of RF Measurements: Out of the Lab and into the Real World”

http://www.hatdaw.com/papers/Modified_Michaelson_Conference_presentation_final_8-11-2001.pdf

the buildings. All other areas at the site are below the FCC General Population/Uncontrolled Environment MPE limits.

There are no areas at this site which were found to exceed the Occupational/Controlled Environment MPE limits.

RECOMMENDATIONS

- All areas shown on the map which exceed the FCC General Population/Uncontrolled Environment MPE should only be visited by individuals that have received RF Safety training.
- The posts demarcating the site boundary shall be maintained.
- The users of the site shall adopt a site Safety Plan.

STATEMENT OF ENGINEER

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Stephen S. Lockwood, P.E.

15 May 2013



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