

**October 2023  
KJET(FM) Channel 289C2  
Union, Washington  
Allocation Study**

**One-Step Application**

The instant application is being filed by the licensee of FM station KJET, proposing an upgrade from Channel 289C3 to Channel 289C2 at Union, Washington, with a change in transmitter site. Separate allotment and transmitter sites are specified this application.

**Channel 289C2 Allotment Site**

The attached spacing study shows that the proposed Channel 289C2 allotment site satisfies the domestic co-channel and adjacent channel spacing requirements for Class C2 stations as prescribed in §73.207 of the Commission's Rules.

The spacing study indicates that the proposed allotment site is short-spaced to the licensed facility of KZGI 289A Sedro-Woolley. However, KZGI has been granted a construction permit 0000218698 to operate on Channel 245A at Sedro-Woolley. The grant of 0000218698 – for a non-adjacent-channel change – modified the underlying allotment for KZGI.<sup>1</sup> The proposed KJET Channel 289C2 facility is fully-spaced to the new KZGI Channel 245A facility, in that there is no spacing requirement between these channels. Under the precedent established in *Auburn*, the licensed KZGI facility is not an impediment to grant of the instant application.<sup>2</sup>

The proposed Channel 289C2 allotment site is located 29 kilometers from the far side of Union. The standard 70 dBu contour distance for a Class C2 facility is 32.6 km. Therefore the proposed allotment will provide 70 dBu service to 100% of Union.

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<sup>1</sup> Per the condition on the KZGI construction permit: "Pursuant to the grant of this construction permit and the authority found in Sections 4(i), 5(c)(1), 303 and 307(b) of the Communications Act of 1934, as amended, and Sections 0.61, 0.204(b), 0.283, 1.420, 73.203(b), and 73.3573 of the Commission's Rules, the FM assignment IS MODIFIED as follows: Community, Channel No. : Sedro-Woolley, WA: Add 245A, Delete 289A. Pursuant to Section 316(a) of the Communications Act of 1934, as amended, license BLH-20170124ABU IS MODIFIED to specify operation on Channel 245A in lieu of Channel 289A."

<sup>2</sup> See *Auburn, Alabama, et al.*, Memorandum Opinion and Order, 18 FCC Rcd 10333 (MB 2003) (permitting the filing of petitions for rulemaking based on an effective but not yet final FM allotment Order in another FM allotment proceeding).

## **Channel 289C2 Transmitter Site**

The attached spacing study shows that the proposed transmitter site satisfies the domestic co-channel and adjacent channel spacing requirements for Class C2 stations as prescribed in §73.207 of the Commission's Rules, with the exception of the following:

### ***KRSE 289C1 Yakima***

The proposed facility is short-spaced to the licensed facility of KRSE 289C1 Yakima. Processing pursuant to §73.215 of the Commission's Rules is requested with respect to KRSE, and the attached allocation study map is included to demonstrate the lack of prohibited contour overlap with that facility.

### ***KZGI 289A Sedro-Woolley***

The proposed facility is short-spaced to the licensed facility of KZGI 289A Sedro-Woolley. However, KZGI has been granted a construction permit 0000218698 to operate on Channel 245A at Sedro-Woolley. The grant of 0000218698 – for a non-adjacent-channel change – modified the underlying allotment for KZGI.<sup>3</sup> The proposed KJET Channel 289C2 facility is fully-spaced to the new KZGI Channel 245A facility, in that there is no spacing requirement between these channels. Under the precedent established in *Auburn*, the licensed KZGI facility is not an impediment to grant of the instant application.<sup>4</sup>

## **International Spacing Study**

The proposed KJET facility is short-spaced to Canadian station CBU-FM, which operates on Channel 289C at Vancouver, British Columbia. Under the terms of the *Working Arrangement for the Allotment and Assignment of FM Broadcasting Channels Under the Agreement Between the Government of Canada and the Government of the United States of America Relating to the FM*

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<sup>3</sup> Per the condition on the KZGI construction permit: "Pursuant to the grant of this construction permit and the authority found in Sections 4(i), 5(c)(1), 303 and 307(b) of the Communications Act of 1934, as amended, and Sections 0.61, 0.204(b), 0.283, 1.420, 73.203(b), and 73.3573 of the Commission's Rules, the FM assignment IS MODIFIED as follows: Community, Channel No. : Sedro-Woolley, WA: Add 245A, Delete 289A. Pursuant to Section 316(a) of the Communications Act of 1934, as amended, license BLH-20170124ABU IS MODIFIED to specify operation on Channel 245A in lieu of Channel 289A."

<sup>4</sup> See *Auburn, Alabama, et al.*, Memorandum Opinion and Order, 18 FCC Rcd 10333 (MB 2003) (permitting the filing of petitions for rulemaking based on an effective but not yet final FM allotment Order in another FM allotment proceeding).

*Broadcasting Service*, as amended in 1997 ("*Working Arrangement*"), the required co-channel Class C2 to Class C spacing is 274 kilometers, whereas the distance between the proposed allotment site and the CBU-FM transmitter site is 228 kilometers. The attached allocation study exhibit "KJET 289C2 Canada Allocation Study Map" demonstrates that the proposed KJET 34 dBu F(50,10) contour will not overlap the protected service area of CBU-FM (97 km radius) over Canadian land areas.

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## SEARCH PARAMETERS

Channel: 289C2 105.7 MHz  
 Latitude: 47 30 30.0 (NAD83)  
 Longitude: 123 21 48.0  
 Safety Zone: 32 km  
 Job Title: UNION 289C2 ALLOT SITE

Page 1

| Call<br>Status                       | City<br>St                          | FCC File No. | Channel<br>Freq. | ERP(kW)<br>HAAT(m) | Latitude<br>Longitude     | Bearing<br>deg-True | Dist<br>(km)     | Req<br>(km)  |
|--------------------------------------|-------------------------------------|--------------|------------------|--------------------|---------------------------|---------------------|------------------|--------------|
| CP                                   | METCHOSIN ETC.<br>BC                |              | 286A<br>105.1    | 0.000<br>0.0       | 48 24 8.3<br>123 34 24.7  | 351.1               | 100.63<br>31.63  | 69<br>CLEAR  |
| KCMS<br>LIC                          | EDMONDS<br>WA BLH-20010212AAE       |              | 287C1<br>105.3   | 54.000<br>385.0    | 47 32 39.4<br>122 6 30.4  | 87.1                | 94.59<br>15.59   | 79<br>CLEAR  |
| K289BZ<br>LIC                        | GIG HARBOR<br>WA BLFT-20150213AAP   |              | 289D<br>105.7    | 0.060<br>0.0       | 47 20 18.3<br>122 36 10.4 | 108.0               | 60.41<br>0.00    | 0<br>TRANS   |
| KVRU-LP<br>LIC                       | SEATTLE<br>WA BLL-20170911AAE       |              | 289L1<br>105.7   | 0.100<br>0.0       | 47 34 15.3<br>122 17 27.4 | 84.7                | 81.04<br>0.00    | 0<br>LPFM    |
| KZGI<br>LIC                          | SEDRO-WOOLLEY<br>WA BLH-20170124ABU |              | 289A<br>105.7    | 0.700<br>-88.4     | 48 31 17.7<br>122 13 6.8  | 36.7<br>SS          | 141.38<br>-24.62 | 166<br>SHORT |
| NOTE: MODIFIED TO 245A BY 0000218698 |                                     |              |                  |                    |                           |                     |                  |              |
| CBUFM<br>LIC                         | VANCOUVER<br>BC                     |              | 289C<br>105.7    | 100.000<br>567.0   | 49 21 11.4<br>122 57 22.7 | 8.2                 | 207.34<br>-66.66 | 274<br>SHORT |
| K289AK<br>LIC                        | ORTING<br>WA BMLFT-20140721AC       |              | 289D<br>105.7    | 0.009<br>0.0       | 47 2 51.4<br>122 8 37.4   | 118.7               | 105.54<br>0.00   | 0<br>TRANS   |
| KRSE<br>LIC                          | YAKIMA<br>WA BMLH-20130327AIS       |              | 289C1<br>105.7   | 100.000<br>172.3   | 46 42 41.2<br>120 37 26.4 | 112.1               | 226.01<br>2.01   | 224<br>CLOSE |
| KJET<br>LIC                          | UNION<br>WA 0000180223              |              | 289C3<br>105.7   | 0.510<br>627.0     | 47 19 12.0<br>123 20 44.8 | 176.4               | 20.98<br>-156.02 | 177<br>SHORT |
| ALC                                  | PORT RENFREW<br>BC                  |              | 290A<br>105.9    | 0.000<br>0.0       | 48 32 47.3<br>124 24 14.8 | 326.5               | 139.11<br>2.11   | 137<br>CLOSE |
| KBKS-FM<br>LIC                       | TACOMA<br>WA 0000119011             |              | 291C<br>106.1    | 73.000<br>696.0    | 47 30 16.7<br>121 58 7.8  | 89.7                | 105.06<br>0.06   | 105<br>CLOSE |

===== END OF FM SPACING STUDY FOR CHANNEL 289 =====

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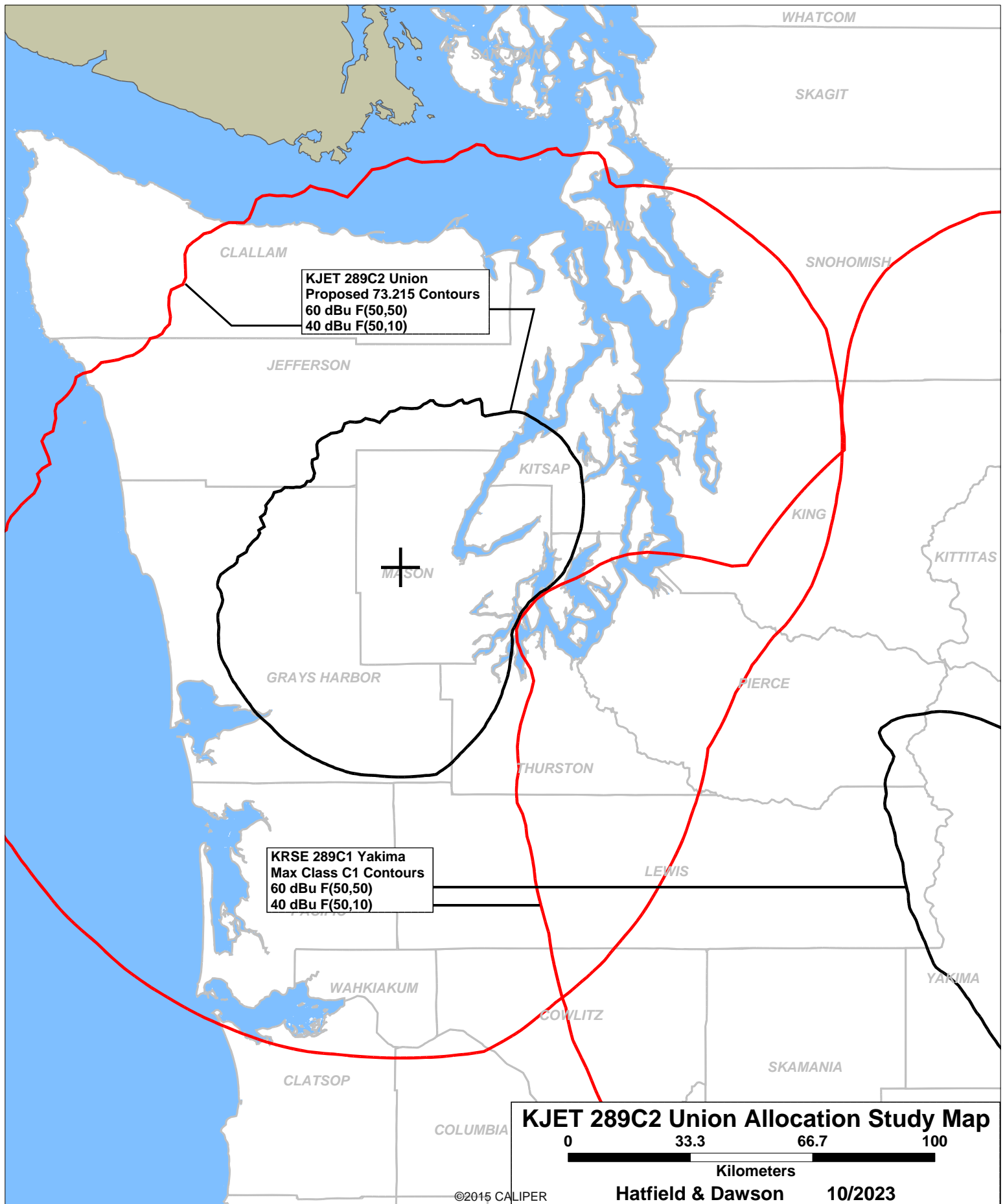
## SEARCH PARAMETERS

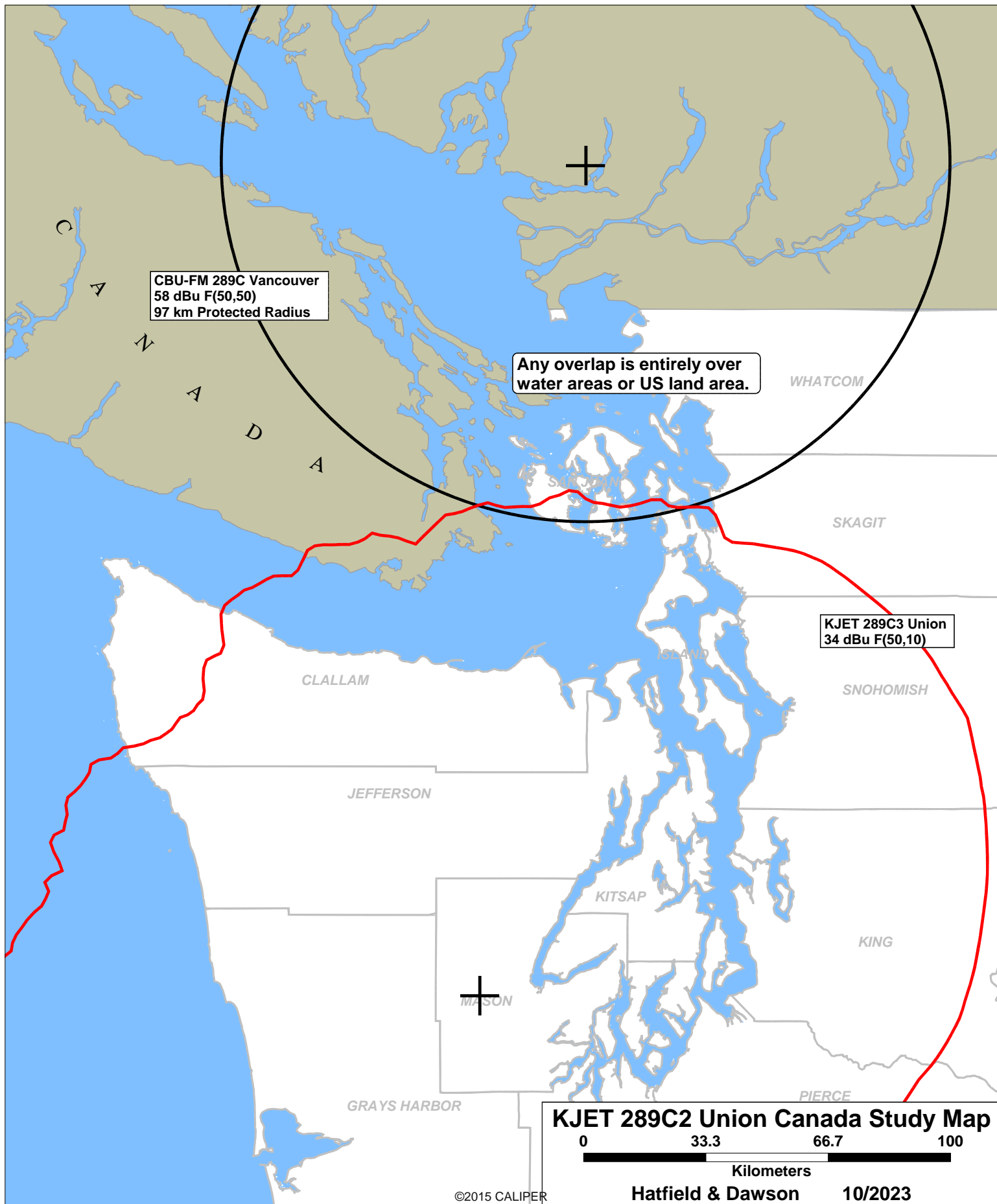
Channel: 289C2 105.7 MHz  
 Latitude: 47 19 10.8 (NAD83)  
 Longitude: 123 20 45.8  
 Safety Zone: 32 km  
 Job Title: KJET 289C2 TRANSMIT SITE

Page 1

| Call<br>Status                           | City<br>St    | FCC File No.     | Channel<br>Freq. | ERP(kW)<br>HAAT(m) | Latitude<br>Longitude | Bearing<br>deg-True | Dist<br>(km) | Req<br>(km) |
|--|---------------|------------------|------------------|--------------------|-----------------------|---------------------|--------------|-------------|
| KCMS                                     | EDMONDS       |                  | 287C1            | 54.000             | 47 32 39.4            | 74.5                | 96.65        | 79          |
| LIC                                      | WA            | BLH-20010212AAE  | 105.3            | 385.0              | 122 6 30.4            |                     | 17.65        | CLEAR       |
| KUKN                                     | LONGVIEW      |                  | 288A             | 0.700              | 46 9 46.4             | 163.6               | 133.96       | 106         |
| LIC                                      | WA            | BLH-20160629ABL  | 105.5            | 256.0              | 122 51 17.4           | SS                  | 27.96        | CLEAR       |
| K289BZ                                   | GIG HARBOR    |                  | 289D             | 0.060              | 47 20 18.3            | 87.6                | 56.21        | 0           |
| LIC                                      | WA            | BLFT-20150213AAP | 105.7            | 0.0                | 122 36 10.4           |                     | 0.00         | TRANS       |
| KVRU-LP                                  | SEATTLE       |                  | 289L1            | 0.100              | 47 34 15.3            | 70.2                | 84.34        | 0           |
| LIC                                      | WA            | BLL-20170911AAE  | 105.7            | 0.0                | 122 17 27.4           |                     | 0.00         | LPFM        |
| KZGI                                     | SEDRO-WOOLLEY |                  | 289A             | 0.700              | 48 31 17.7            | 31.7                | 157.99       | 166         |
| LIC                                      | WA            | BLH-20170124ABU  | 105.7            | -88.4              | 122 13 6.8            | SS                  | -8.01        | SHORT       |
| NOTE: MODIFIED TO 245A BY 0000218698     |               |                  |                  |                    |                       |                     |              |             |
| CBUFM                                    | VANCOUVER     |                  | 289C             | 100.000            | 49 21 11.4            | 7.1                 | 227.96       | 274         |
| LIC                                      | BC            |                  | 105.7            | 567.0              | 122 57 22.7           |                     | -46.04       | SHORT       |
| K289AK                                   | ORTING        |                  | 289D             | 0.009              | 47 2 51.4             | 108.0               | 96.02        | 0           |
| LIC                                      | WA            | BMLFT-20140721AC | 105.7            | 0.0                | 122 8 37.4            |                     | 0.00         | TRANS       |
| KRSE                                     | YAKIMA        |                  | 289C1            | 100.000            | 46 42 41.2            | 107.1               | 217.74       | 224         |
| LIC                                      | WA            | BMLH-20130327AIS | 105.7            | 172.3              | 120 37 26.4           |                     | -6.26        | SHORT       |
| ABSOLUTE MINIMUM 73.215 SPACING = 211 KM |               |                  |                  |                    |                       |                     |              |             |
| KJET                                     | UNION         |                  | 289C3            | 0.510              | 47 19 12.0            | 29.5                | 0.04         | 177         |
| LIC                                      | WA            | 0000180223       | 105.7            | 627.0              | 123 20 44.8           |                     | -176.96      | SHORT       |
|  | PORT RENFREW  |                  | 290A             | 0.000              | 48 32 47.3            | 330.4               | 157.66       | 137         |
| ALC                                      | BC            |                  | 105.9            | 0.0                | 124 24 14.8           |                     | 20.66        | CLEAR       |
| KBKS-FM                                  | TACOMA        |                  | 291C             | 73.000             | 47 30 16.7            | 78.3                | 105.96       | 105         |
| LIC                                      | WA            | 0000119011       | 106.1            | 696.0              | 121 58 7.8            |                     | 0.96         | CLOSE       |
| K291BY                                   | RAYMOND       |                  | 291D             | 0.013              | 46 41 43.4            | 205.1               | 76.61        | 0           |
| LIC                                      | WA            | 0000162646       | 106.1            | 0.0                | 123 46 21.6           |                     | 0.00         | TRANS       |
| K292HN                                   | CENTRALIA     |                  | 292D             | 0.250              | 46 43 50.7            | 159.6               | 69.84        | 0           |
| LIC                                      | WA            | 0000101779       | 106.3            | 0.0                | 123 1 33.7            |                     | 0.00         | TRANS       |

===== END OF FM SPACING STUDY FOR CHANNEL 289 =====





**October 2023  
KJET(FM) Channel 289C2  
Union, Washington  
RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 289C2 (105.7 MHz) with a maximum lobe effective radiated power of 2.1 kilowatts. Operation is proposed with a directional antenna which will be side-mounted on an existing tower atop North Mountain.

The proposed antenna support structure will not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

**RF Exposure Calculations**

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.4 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 2 element pattern, which is the accepted element pattern for the directional antenna to be used. The highest calculated ground level power density occurs at a distance of 30 meters from the base of



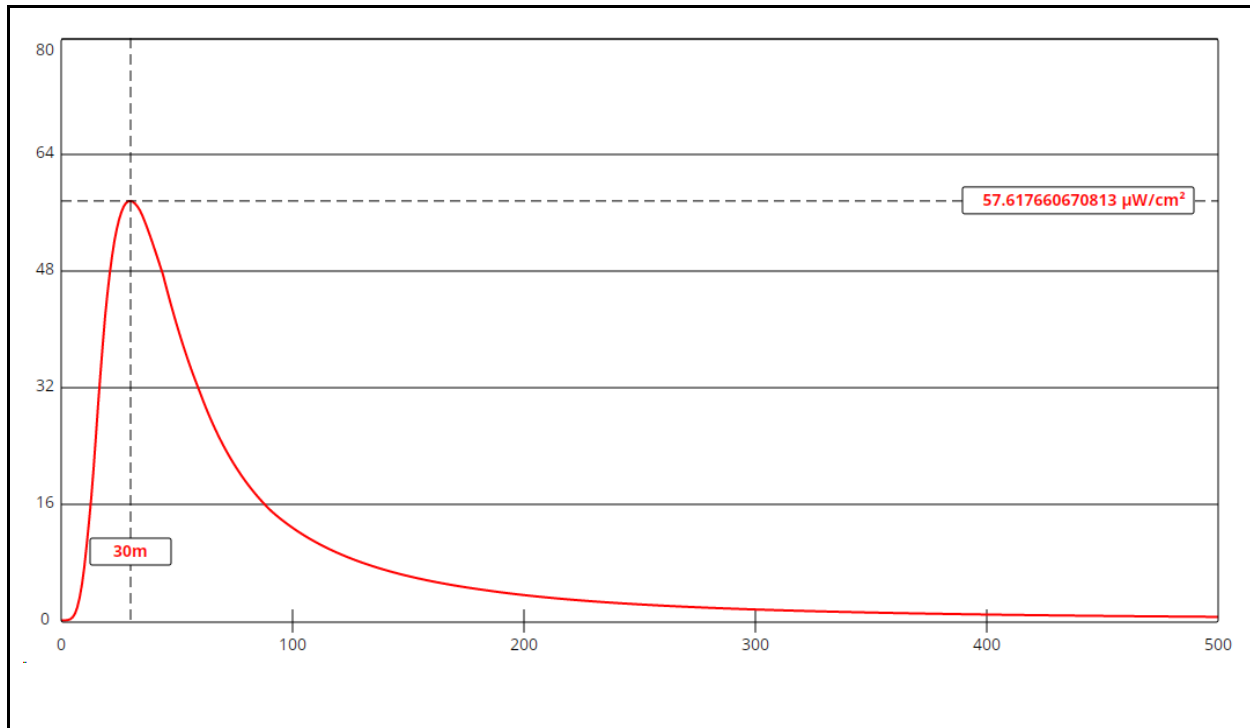
the antenna support structure. At this point the power density is calculated to be  $57.6 \mu\text{W}/\text{cm}^2$ , which is 28.8% of  $200 \mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

Calculations of the power density produced by KJET and the other stations authorized at this transmitter site are summarized in the following table:

| Call                         | ERP Antenna Model  | Relative Field    | Height AGL | Calculated Exposure            | Gen Pop FCC Limit             | % of Limit |
|------------------------------|--|-------------------|------------|--------------------------------|-------------------------------|------------|
| KJET<br>289C2                | 2.1 kW H<br>2.1 kW V<br>2-bay half-wave                  | FMModel<br>Type 2 | 18 m       | $57.6 \mu\text{W}/\text{cm}^2$ | $200 \mu\text{W}/\text{cm}^2$ | 28.8%      |
| KDDS-FM<br>257C<br>Auxiliary | 41 kW H<br>41 kW V<br>SHI 6810-10D-SS-DA                 | FMModel<br>Type 1 | 31 m       | $21.6 \mu\text{W}/\text{cm}^2$ | $200 \mu\text{W}/\text{cm}^2$ | 10.8%      |
| KZTM<br>275C<br>CP           | 95 kW H<br>95 kW V<br>ERI rototiller<br>10-bay half-wave | FMModel<br>Type 3 | 31 m       | $32.8 \mu\text{W}/\text{cm}^2$ | $200 \mu\text{W}/\text{cm}^2$ | 16.4%      |

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KJET and the operations of the other stations authorized at this site (were their maxima to coincide, which they do not) is  $112 \mu\text{W}/\text{cm}^2$ , which is 56% of  $200 \mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.



## Ground-Level RF Exposure

OET FMModel

### KJET 289C2 Union

Antenna Type: Type 2  
No. of Elements: 2  
Element Spacing: 0.5 wavelength

Distance: 500 meters  
Horizontal ERP: 2.1 kW  
Vertical ERP: 2.1 kW

Antenna Height: 18 meters AGL

Maximum Calculated Power Density is  $57.6 \mu\text{W}/\text{cm}^2$  at 30 meters from the antenna structure.

