

TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
NEW TV TRANSLATOR STATION
FACILITY ID 130787
TILLAMOOK, OREGON
CH 26 14 KW (MAX-DA)

Technical Narrative

The technical exhibit of which this narrative is part was prepared in response to an FCC letter dated March 18, 2004.¹ Specifically, this technical exhibit was prepared in support of a complete FCC Form 346 as requested by the FCC letter. It is proposed to operate on channel 26 with a "zero" (Z) carrier frequency offset and a directional antenna maximum effective radiated power (ERP) of 14 kilowatts (kW). It is proposed to use an Andrew ALP16L2-HSP "off-the-shelf" directional antenna (Antenna ID 16532) with a main lobe orientation of 100 degrees true and incorporating 1.8° of electrical beam tilt. The ERP towards the radio horizon will be 14 kW, and the maximum ERP at any horizontal or vertical angle will be 30 kilowatts. The antenna radiation center height above mean sea level (RCAMSL) is 463 meters.

Response to Paragraph 6 - Antenna Registration

It is proposed to side-mount the antenna at the 32-meter (105 foot) level of an existing tower located at Latitude 45° 27' 59", Longitude 123° 55' 11" (FCC Tower Registration Number 1018405). The existing tower has an overall height above ground level of 45.7 meters and an overall height above mean sea level of 476.7 meters.

Response to Paragraph 13(a) - TV Broadcast Analog Protection

A study has been conducted using the provisions of Section 74.705 which indicates that the proposed TV translator operation will not create prohibited interference to other existing, authorized or proposed NTSC full-power stations.

¹ See letter to National Minority TV, Inc. from Hossein Hashemzadeh, Associate Chief, Video Division, Media Bureau, Re: BNPTTL-20000829AQV, Facility ID 130787.

Response to Paragraph 13(b) - DTV Station Protection

Calculations based on OET Bulletin No. 69 indicate that the proposed operation on channel 26 complies with the FCC's 0.5% interference threshold criteria to all allotted, proposed or actual DTV operating facilities on channels 25, 26 and 27. The results of the OET-69 Bulletin No. 69 are tabulated on Figure 1 and, as indicated, the proposed operation is not predicted to cause any interference to any DTV facilities.

Response to Paragraph 13(c) - LPTV/TV Translator Protection

A study has been conducted using the provisions of Section 74.707 which indicates that the TV translator proposal will not create prohibited interference to other existing, authorized or proposed LPTV/TV translator with the exception of the licensed co-channel operation of K26DB at Astoria, OR (BLTT-19911016IG) and the authorized co-channel facility of K58CO at Portland, OR (BPTTL-20000728AEO). However, based on the provisions of OET-69 Bulletin as permitted by FCC rules [Section 74.705(e)], it is believed that the proposed operation complies with the FCC's interference criteria towards these operations. Specifically, calculations have been made using the procedures outline in the FCC's OET-69 Bulletin and a 2 square kilometer grid.² The results of the OET-69 Bulletin are tabulated on Figure 1 and, as indicated, the proposal complies with the FCC's 0.5% interference threshold.

Environmental Considerations

The proposed facilities were evaluated in terms of potential radiofrequency radiation exposure at ground level in accordance with OST Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation". The calculated power density at the base of the tower was calculated using the appropriate equation on Page 13 of the Bulletin. Using a "worst-case" vertical relative field value of 0.2 (see Figure 2), a maximum visual

² The du Treil, Lundin & Rackley, Inc. DTV interference analysis program is based on the program and 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. An Alpha based processor computer system was employed.

effective radiated power of 30 kilowatts and 10 percent aural power, the calculated power density at 2 meters above ground level at the base of the tower is 0.0223 milliwatts per square centimeter (mW/cm^2), or 6.1 percent of the Commission's recommended limit applicable to general population/uncontrolled exposure areas ($0.36 \text{ mW}/\text{cm}^2$ for TV channel 26). Therefore, as this is a multi-user site, measurements will be made to substantiate compliance with the RF emission rules.

Access to the transmitting site will be restricted and appropriately marked with warning signs. Furthermore, as this is a multi-user site, an agreement will be in place in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

Finally, it is noted that this technical exhibit only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already has been provided to the FCC by the tower owner as part of the tower registration process.

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April 12, 2004

OET-69 INTERFERENCE CAUSED STUDY

CELL SIZE : 2.00

Using offset in determining thresholds

K26DB 46-17-10 123-53-50 26(-) 23.800 kw 419 m DA 50.0 % 72.9 dBu

ASTORIA OR

LIC BLTT19911016IG

1.00 0.96 0.81 0.61 0.45 0.35 0.26 0.20 0.20 0.21 0.22 0.22

0.21 0.20 0.20 0.24 0.30 0.43 0.60 0.78 0.94 1.00 0.96 0.85

0.65 0.41 0.40 0.40 0.37 0.38 0.40 0.40 0.43 0.65 0.88 0.98

Ref Az: 330.0

Using DEFAULT vertical antenna pattern

| | | |
|--------------------------------|----------|-------|
| | Area | Pop |
| within Noise Limited Contour | 1868.419 | 35484 |
| not affected by terrain losses | 1723.455 | 34970 |

NEW26 45-27-59 123-55-11 26(Z) 14.000 kw 463 m DA 10.0 % 72.9

TILLAMOOK OR

PROPOSED

0.73 0.74 0.78 0.83 0.90 0.95 0.99 1.00 0.97 0.92 0.83 0.72

0.58 0.45 0.33 0.26 0.26 0.29 0.31 0.29 0.26 0.26 0.33 0.45

0.58 0.72 0.83 0.92 0.97 1.00 0.99 0.95 0.90 0.83 0.78 0.74

Ref Az: 100.0

Using DEFAULT vertical antenna pattern

D/U Baseline: 28.00

| | | |
|--------------|-------|-----|
| | Area | Pop |
| Interference | 322.1 | 171 |

K58CO 45-27-17 122-33-01 26(+) 25.500 kw 351 m DA 50.0 % 72.9 dBu

PORTLAND OR

CP BPTTL20000728AEO

1.00 0.94 0.83 0.80 0.93 1.00 0.98 0.92 0.83 0.71 0.58 0.41

0.14 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02

0.13 0.40 0.56 0.71 0.82 0.92 0.98 0.98 0.89 0.78 0.83 0.95

(53.0 1.00)(307.0 1.00)

Ref Az: 315.0

Using DEFAULT vertical antenna pattern

| | | |
|--------------------------------|----------|---------|
| | Area | Pop |
| within Noise Limited Contour | 1518.200 | 1126878 |
| not affected by terrain losses | 1342.409 | 1049109 |

NEW26 45-27-59 123-55-11 26(Z) 14.000 kw 463 m DA 10.0 % 72.9

TILLAMOOK OR

PROPOSED

0.73 0.74 0.78 0.83 0.90 0.95 0.99 1.00 0.97 0.92 0.83 0.72

0.58 0.45 0.33 0.26 0.26 0.29 0.31 0.29 0.26 0.26 0.33 0.45

0.58 0.72 0.83 0.92 0.97 1.00 0.99 0.95 0.90 0.83 0.78 0.74

Ref Az: 100.0

Using DEFAULT vertical antenna pattern

D/U Baseline: 28.00

| | | |
|--------------|------|-----|
| | Area | Pop |
| Interference | 0 | 0 |

KOPB-DT 45-31-21 122-44-45 27(N) 1000.000 kw 599.5 m 90.0 % 40.0 dBu
PORTLAND OR 29878 1962 DTVSERVICE: 1962000 NTSCSERVICE: 1882000
CP MOD BMPEDT19990713KE

Using DEFAULT vertical antenna pattern

| | | |
|--------------------------------|----------|---------|
| | Area | Pop |
| within Noise Limited Contour | 43183.93 | 2114498 |
| not affected by terrain losses | 31777.91 | 2010196 |

NEW26 45-27-59 123-55-11 26(Z) 14.000 kw 463 m DA 10.0 % 72.9
TILLAMOOK OR
PROPOSED

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 0.73 | 0.74 | 0.78 | 0.83 | 0.90 | 0.95 | 0.99 | 1.00 | 0.97 | 0.92 | 0.83 | 0.72 |
| 0.58 | 0.45 | 0.33 | 0.26 | 0.26 | 0.29 | 0.31 | 0.29 | 0.26 | 0.26 | 0.33 | 0.45 |
| 0.58 | 0.72 | 0.83 | 0.92 | 0.97 | 1.00 | 0.99 | 0.95 | 0.90 | 0.83 | 0.78 | 0.74 |

Ref Az: 100.0

Using DEFAULT vertical antenna pattern

D/U Baseline: -48.00

| | | |
|--------------|------|-----|
| | Area | Pop |
| Interference | 3.99 | 0 |

DKOPBT 45-31-22 122-45-07 27(0) 675.500 kw 600 m DA 90.0 % 40.0 dBu
PORTLAND OR 29878 1962 DTVSERVICE: 1962000 NTSCSERVICE: 1882000

DTVALT DTV ALLOTMENT

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 0.99 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.98 | 0.98 | 0.99 | 0.99 |

(45.0 1.00)(46.0 1.00)(47.0 1.00)

Ref Az: 0.0

Using DEFAULT vertical antenna pattern

| | | |
|--------------------------------|----------|---------|
| | Area | Pop |
| within Noise Limited Contour | 40645.61 | 2079999 |
| not affected by terrain losses | 30105.79 | 1969331 |

NEW26 45-27-59 123-55-11 26(Z) 14.000 kw 463 m DA 10.0 % 72.9
TILLAMOOK OR
PROPOSED

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 0.73 | 0.74 | 0.78 | 0.83 | 0.90 | 0.95 | 0.99 | 1.00 | 0.97 | 0.92 | 0.83 | 0.72 |
| 0.58 | 0.45 | 0.33 | 0.26 | 0.26 | 0.29 | 0.31 | 0.29 | 0.26 | 0.26 | 0.33 | 0.45 |
| 0.58 | 0.72 | 0.83 | 0.92 | 0.97 | 1.00 | 0.99 | 0.95 | 0.90 | 0.83 | 0.78 | 0.74 |

Ref Az: 100.0

Using DEFAULT vertical antenna pattern

D/U Baseline: -48.00

| | | |
|--------------|------|-----|
| | Area | Pop |
| Interference | 0 | 0 |

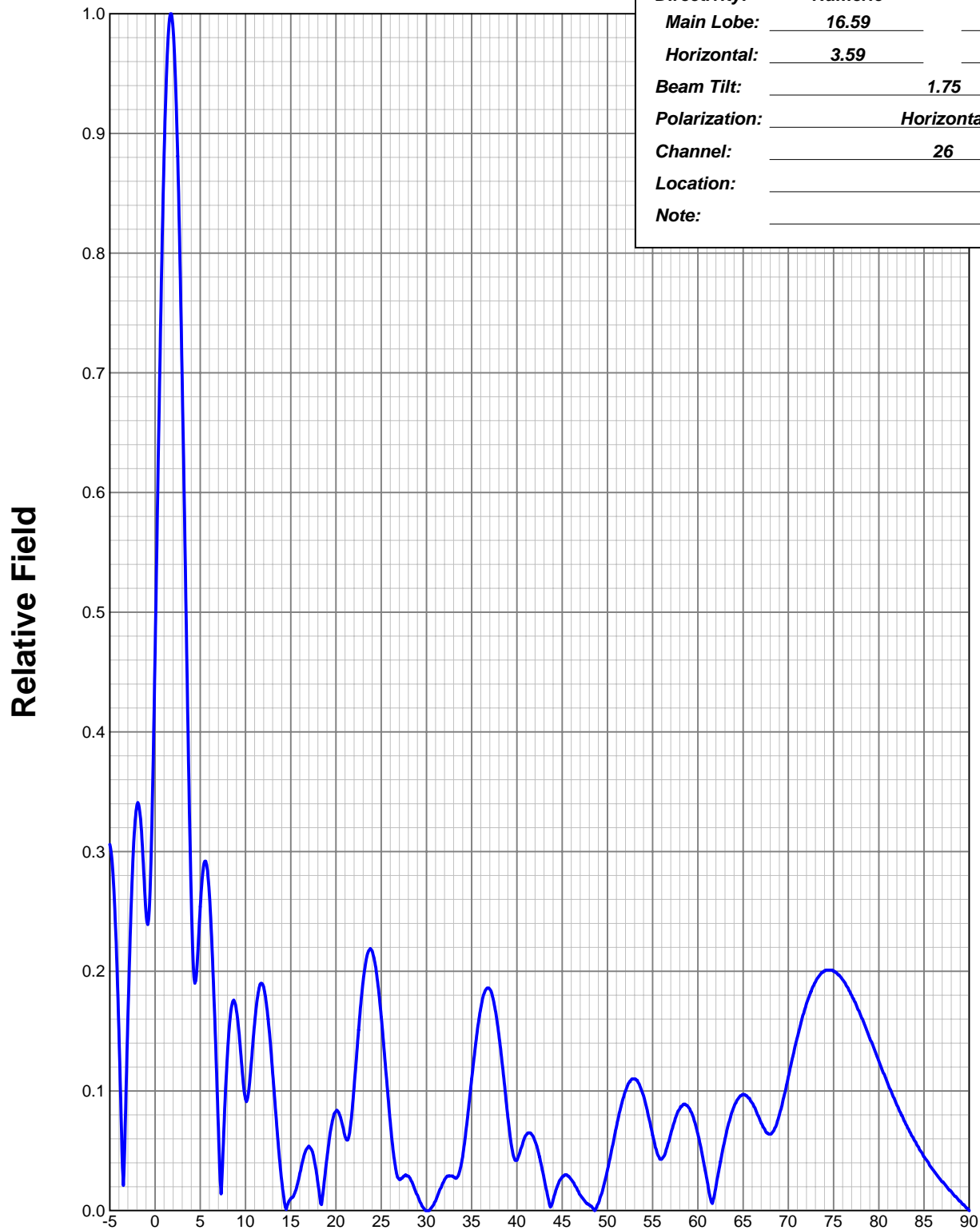
| Facility | Channel | Type | Baseline | Permissible | IX | %Base |
|----------------------|---------|------|----------|-------------|-----|-------|
| K26DB, ASTORIA, OR | 26 | TV | 35484 | 0.5 | 171 | 0.48 |
| K58CO, PORTLAND, OR | 26 | TV | 1126878 | 0.5 | 0 | 0.00 |
| KOPB-T, PORTLAND, OR | 27 | DTV | 1962000 | 0.5 | 0 | 0.00 |
| DKOPBT, PORTLAND, OR | 27 | DTV | 1969331 | 0.5 | 0 | 0.00 |



ANDREW®

ELEVATION PATTERN

| | | |
|---------------|------------|-------|
| Type: | ALP16L7 | |
| Directivity: | Numeric | dBd |
| Main Lobe: | 16.59 | 12.20 |
| Horizontal: | 3.59 | 5.55 |
| Beam Tilt: | 1.75 | |
| Polarization: | Horizontal | |
| Channel: | 26 | |
| Location: | | |
| Note: | | |



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Figure 2, Sheet 1 of 2



ELEVATION TABULATED DATA

Type: ALP16L7

Polarization: Horizontal

| Angle | Field | dB | Angle | Field | dB | Angle | Field | dB | Angle | Field | dB |
|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
| -5.00 | 0.306 | -10.29 | 6.50 | 0.181 | -14.85 | 42.00 | 0.058 | -24.73 | 88.00 | 0.016 | -35.92 |
| -4.75 | 0.292 | -10.71 | 6.75 | 0.127 | -17.96 | 43.00 | 0.027 | -31.37 | 89.00 | 0.008 | -41.94 |
| -4.50 | 0.261 | -11.67 | 7.00 | 0.069 | -23.22 | 44.00 | 0.009 | -40.92 | 90.00 | 0.000 | 0.00 |
| -4.25 | 0.213 | -13.45 | 7.25 | 0.020 | -34.20 | 45.00 | 0.028 | -31.06 | | | |
| -4.00 | 0.151 | -16.42 | 7.50 | 0.047 | -26.56 | 46.00 | 0.026 | -31.70 | | | |
| -3.75 | 0.079 | -22.05 | 7.75 | 0.094 | -20.58 | 47.00 | 0.013 | -37.72 | | | |
| -3.50 | 0.021 | -33.56 | 8.00 | 0.131 | -17.65 | 48.00 | 0.005 | -46.02 | | | |
| -3.25 | 0.086 | -21.36 | 8.25 | 0.157 | -16.08 | 49.00 | 0.006 | -44.44 | | | |
| -3.00 | 0.161 | -15.86 | 8.50 | 0.172 | -15.29 | 50.00 | 0.034 | -29.37 | | | |
| -2.75 | 0.228 | -12.82 | 8.75 | 0.175 | -15.14 | 51.00 | 0.070 | -23.10 | | | |
| -2.50 | 0.283 | -10.96 | 9.00 | 0.167 | -15.55 | 52.00 | 0.100 | -20.00 | | | |
| -2.25 | 0.321 | -9.88 | 9.25 | 0.151 | -16.42 | 53.00 | 0.110 | -19.17 | | | |
| -2.00 | 0.339 | -9.40 | 9.50 | 0.129 | -17.79 | 54.00 | 0.096 | -20.35 | | | |
| -1.75 | 0.337 | -9.46 | 9.75 | 0.107 | -19.41 | 55.00 | 0.063 | -24.01 | | | |
| -1.50 | 0.317 | -9.98 | 10.00 | 0.093 | -20.63 | 56.00 | 0.043 | -27.33 | | | |
| -1.25 | 0.283 | -10.96 | 11.00 | 0.156 | -16.14 | 57.00 | 0.064 | -23.88 | | | |
| -1.00 | 0.249 | -12.08 | 12.00 | 0.187 | -14.56 | 58.00 | 0.085 | -21.41 | | | |
| -0.75 | 0.242 | -12.34 | 13.00 | 0.115 | -18.79 | 59.00 | 0.086 | -21.31 | | | |
| -0.50 | 0.278 | -11.12 | 14.00 | 0.025 | -32.04 | 60.00 | 0.064 | -23.88 | | | |
| -0.25 | 0.360 | -8.89 | 15.00 | 0.010 | -40.00 | 61.00 | 0.026 | -31.70 | | | |
| 0.00 | 0.465 | -6.65 | 16.00 | 0.031 | -30.17 | 62.00 | 0.020 | -33.98 | | | |
| 0.25 | 0.580 | -4.74 | 17.00 | 0.054 | -25.35 | 63.00 | 0.060 | -24.44 | | | |
| 0.50 | 0.692 | -3.20 | 18.00 | 0.023 | -32.77 | 64.00 | 0.087 | -21.21 | | | |
| 0.75 | 0.795 | -1.99 | 19.00 | 0.044 | -27.13 | 65.00 | 0.097 | -20.26 | | | |
| 1.00 | 0.881 | -1.10 | 20.00 | 0.083 | -21.62 | 66.00 | 0.090 | -20.92 | | | |
| 1.25 | 0.946 | -0.48 | 21.00 | 0.062 | -24.15 | 67.00 | 0.073 | -22.73 | | | |
| 1.50 | 0.987 | -0.11 | 22.00 | 0.103 | -19.74 | 68.00 | 0.064 | -23.88 | | | |
| 1.75 | 1.000 | 0.00 | 23.00 | 0.192 | -14.33 | 69.00 | 0.080 | -21.94 | | | |
| 2.00 | 0.987 | -0.11 | 24.00 | 0.217 | -13.27 | 70.00 | 0.112 | -19.02 | | | |
| 2.25 | 0.946 | -0.49 | 25.00 | 0.162 | -15.81 | 71.00 | 0.145 | -16.77 | | | |
| 2.50 | 0.881 | -1.10 | 26.00 | 0.074 | -22.62 | 72.00 | 0.173 | -15.24 | | | |
| 2.75 | 0.796 | -1.99 | 27.00 | 0.026 | -31.70 | 73.00 | 0.191 | -14.38 | | | |
| 3.00 | 0.694 | -3.17 | 28.00 | 0.029 | -30.75 | 74.00 | 0.200 | -13.98 | | | |
| 3.25 | 0.582 | -4.70 | 29.00 | 0.013 | -37.72 | 75.00 | 0.200 | -13.98 | | | |
| 3.50 | 0.466 | -6.63 | 30.00 | 0.000 | 0.00 | 76.00 | 0.193 | -14.29 | | | |
| 3.75 | 0.355 | -9.00 | 31.00 | 0.008 | -41.94 | 77.00 | 0.180 | -14.89 | | | |
| 4.00 | 0.261 | -11.67 | 32.00 | 0.026 | -31.70 | 78.00 | 0.163 | -15.76 | | | |
| 4.25 | 0.202 | -13.89 | 33.00 | 0.028 | -31.06 | 79.00 | 0.144 | -16.83 | | | |
| 4.50 | 0.192 | -14.33 | 34.00 | 0.045 | -26.94 | 80.00 | 0.125 | -18.06 | | | |
| 4.75 | 0.219 | -13.19 | 35.00 | 0.110 | -19.17 | 81.00 | 0.106 | -19.49 | | | |
| 5.00 | 0.254 | -11.90 | 36.00 | 0.169 | -15.44 | 82.00 | 0.088 | -21.11 | | | |
| 5.25 | 0.280 | -11.04 | 37.00 | 0.185 | -14.66 | 83.00 | 0.072 | -22.85 | | | |
| 5.50 | 0.292 | -10.69 | 38.00 | 0.147 | -16.65 | 84.00 | 0.058 | -24.73 | | | |
| 5.75 | 0.286 | -10.86 | 39.00 | 0.078 | -22.16 | 85.00 | 0.045 | -26.94 | | | |
| 6.00 | 0.265 | -11.54 | 40.00 | 0.042 | -27.54 | 86.00 | 0.034 | -29.37 | | | |
| 6.25 | 0.228 | -12.82 | 41.00 | 0.063 | -24.01 | 87.00 | 0.024 | -32.40 | | | |



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Figure 2, Sheet 2 of 2