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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

JUN 13 1997

Federal Communications Commission
Office of Secretary

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In the Matter of)
)
Advanced Television Systems)
and Their Impact Upon the) MM Docket No. 87-268
Existing Television Broadcast)
Service)

To: The Commission

PETITION FOR RECONSIDERATION AND CLARIFICATION

KPDX License Partnership, licensee of Television Station KPDX(TV), NTSC
Channel 49, Vancouver, Washington ("KPDX"), by its attorneys, and pursuant to 47 C.F.R.
§ 1.429(a) (1996), hereby petitions the FCC for reconsideration and clarification of its Sixth
Report and Order in the above-captioned proceeding.¹

I. Introduction.

KPDX fully supports the Commission's efforts to bring digital television ("DTV")
service to the American public. KPDX requests, however, that the Commission reconsider
and clarify certain aspects of the Sixth R&O as it applies to KPDX.

As an initial matter, the Commission should not finalize the DTV Table of Allotments
or its DTV rules until broadcasters have had the opportunity to evaluate and comment on
OET Bulletin No. 69 as it pertains to particular DTV allotments. KPDX also requests that
the Commission reconsider the DTV channel assigned to its station. Based on studies KPDX

¹Sixth Report and Order, MM Docket No. 87-268, FCC 97-115 (released April 21,
1997) ("Sixth R&O").

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has conducted, another more suitable DTV channel is available that would greatly improve KPDX's DTV signal. Because KPDX relies heavily on a translator network to provide over-the-air service to rural communities, KPDX also urges the Commission to consider the impact that DTV will have on low power television stations. Finally, KPDX asks that the Commission clarify certain aspects of its new DTV rules. This clarification is necessary to ensure that broadcasters have a full understanding of the new rules and can complete the transition to DTV operations more efficiently and quickly.

**II. The Commission Must Allow Broadcasters To Comment
on OET Bulletin No. 69 Before It Finalizes the DTV Table of Allotments.**

In order to evaluate whether the DTV Table implements the Commission's objectives in specific instances, interested parties must be able to calculate the interference that is likely to result and determine the service areas of new DTV stations in accordance with the Commission's methodology (Longley-Rice). But the critical piece of information necessary for stations to evaluate contours—*OET Bulletin No. 69*—has not been timely released though the Sixth R&O refers to it numerous times. Without *OET Bulletin No. 69*, it is impossible, for example, for stations to know precisely what operating parameters for the Longley-Rice methodology apply or what amount of interference is considered *de minimis*. In turn, it is impossible for stations to know how to assess the reasonableness of either their own DTV allotment or those of nearby licensees. Moreover, broadcasters are ill equipped to verify whether the DTV Table meets *any* standard of adequacy, much less whether it achieves the goals of service replication and minimal interference as the Commission contends.²

²As a matter of administrative law, the Commission must, of course, set forth the basis and underlying support for its rules in a manner that is sufficiently detailed to permit

Therefore, before the rules and the DTV Table become final -- but *after* the Commission's methodology is made available -- the Commission should give interested parties a further opportunity to comment on the Table and the methodology. A brief additional comment period of 90 days will not significantly delay implementation of the transition to DTV. Indeed, to the extent that there are problems with the DTV Table, the Commission can correct those problems more efficiently and expeditiously if they are identified in a further round of comments while this proceeding remains open rather than if such issues are raised in a plethora of separate petitions for rulemaking filed after the DTV Table becomes final.

III. DTV Channel 44 Should Be Assigned To KPDX.

KPDX currently operates on NTSC Channel 49 and was assigned DTV Channel 48 in the Sixth R&O. Based on the limited information available to KPDX, KPDX anticipates a number of problems with its Channel 48 assignment and requests that the Commission assign DTV Channel 44 to the station.

Attached as Exhibit A hereto is the Statement of Robert D. Weller, Consulting Engineer, of the engineering firm of Hammett & Edison (the "Engineering Statement"). Mr. Weller has analyzed the DTV parameters for KPDX's operation on Channel 48 and has determined that such operations would severely limit KPDX's ability to replicate its current NTSC service area and to make a smooth transition to full DTV operations. First, because KPDX's DTV channel (48) is first-adjacent to its NTSC channel (49), the level of

judicial review. See, e.g., National Nutritional Foods Association v. Weinberger, 512 F.2d 688, 701 (2d. Cir. 1975), cert. denied, 423 U.S. 827 (1975).

intermodulation interference is likely to be considerable. Second, the Channel 48 parameters place KPDX at a serious disadvantage when compared to other stations in its market. Of all the stations in the Portland, Oregon/Vancouver, Washington market, KPDX received the lowest power -- 103 kW, compared to other power levels of 960 kW, and 750 kW. Such a low power level virtually ensures that KPDX will have no chance of replicating even a significant portion of its NTSC coverage.

Finally, because the Commission has not determined whether Channels 47 and higher will be part of the "core" spectrum, if the Commission does not reconsider the Channel 48 assignment, KPDX may have to construct two DTV facilities -- one on Channel 48 and then another on a "core" DTV channel. In addition, because of the uncertainty concerning the "core" spectrum definition, KPDX may not have the option of returning to Channel 49 to operate with DTV.

As demonstrated in the Engineering Statement, Channel 44 can be assigned to KPDX without creating intermodulation interference, without serious replication problems, and without running the risk of having to construct two DTV facilities. By using non-adjacent Channel 44, with an HAAT of 527 meters and 446 kW ERP, KPDX can avoid the intermodulation and self-interference problems that would be created by the Channel 48/49 operations. Operation with higher ERP on a non-adjacent channel also will permit KPDX to replicate a greater portion of its current service area, putting KPDX on a stronger competitive footing via-a-vis in its market and ensuring that viewers will not be deprived of over-the-air programming which serves the public interest. Because Channel 44 will be in the "core" spectrum under either of the Commission's "core" spectrum options, KPDX

would not be forced unnecessarily to build two DTV facilities if it is assigned DTV Channel 44.

The Engineering Statement shows that Channel 44 can be assigned to KPDX without any spacing problems and without any increased interference to existing NTSC and proposed DTV operations. Moreover, assignment of Channel 44 for KPDX's DTV operations would be wholly consistent with the Commission's goals in developing the DTV Table of Allotments. In the Sixth R&O, the Commission emphasized that one of its primary goals in establishing the DTV allotments was to ensure that a television station's DTV assignment would replicate its existing service area. Specifically, the Commission stated that:

We believe that providing DTV allotments that replicate the service areas of existing stations offers important benefits for both viewers and broadcasters. This approach will ensure that broadcasters have the ability to reach audiences that they now serve and that viewers have access to the stations that they can now receive over-the-air.

Sixth R&O ¶ 29. Another goal which guided the Commission's development of the DTV Table of Allotments was to minimize interference among DTV stations and among NTSC and DTV stations. Id. ¶ 87. Clearly, each of these goals would be better served if KPDX were assigned DTV Channel 44. Given these facts and circumstances, KPDX strongly urges the Commission to reconsider the Channel 48 assignment and assign Channel 44 for KPDX's DTV operations.

IV. Low Power Television Operations Must Be Protected Throughout the DTV Conversion Process.

KPDX supports the changes to the low power television ("LPTV") rules that the Commission adopted to minimize the impact DTV will have on LPTV operations. KPDX, however, encourages the Commission to adopt rules that would ensure the viability and

survival of LPTV stations in a digital world. Such alternatives could include (a) including LPTV stations and TV translators in the DTV Table of Allotments, (b) providing existing LPTV and TV translator stations a preference in applying for unused DTV spectrum, or (c) allocating Channels 60-69 specifically for the LPTV/TV translator service on a permanent basis to the exclusion of other non-broadcast services.

Although the LPTV service has traditionally been characterized as "secondary," for many television viewers, it is a primary service. This is particularly the case with KPDX which serves mountainous areas in Oregon and Washington States. KPDX, like other similarly-situated stations, has constructed an extensive LPTV station network to ensure that its NTSC signal can be transmitted to cable headends and over-the-air viewers located in mountainous areas.

Currently, two of KPDX's owned and operated LPTV stations serve the Bend, Oregon market. These LPTV stations transmit local and FOX network programming to the viewers in Bend, Oregon. Displacement of these two LPTV stations would deprive the Bend viewers of their only FOX network service and one of two locally-originated television services. KPDX also owns 15 other LPTV stations throughout the Portland, Oregon DMA which retransmit KPDX, and four other separately-owned translators/LPTV stations carry KPDX programming. Thus, it is clear that in this area of the country, translators and LPTV stations are crucial to the delivery of primary over-the-air television service.

The conversion to DTV simply will not allow KPDX to replicate the coverage of KPDX's LPTV station network. Moreover, KPDX has preliminarily determined that due to DTV assignments, at least four of its LPTV stations are in danger of displacement. Many

more may be added to this list depending on the outcome of this reconsideration proceeding and any further changes to the DTV Table of Allotments. Given the importance of LPTV stations and TV translators in the western/mountain regions of the country, it is essential for the Commission to develop rules that will ensure the continued viability of LPTV stations during and after the DTV transition period.

V. Certain of the DTV Rules Require Further Clarification.

The Engineering Statement identifies several elements of the FCC's DTV rules that require further clarification. KPDX requests that the Commission provide clarification on these issues so that broadcasters will have the information they need to evaluate accurately station signal coverage and interference areas.

a. Determination of Coverage Contours. The Commission's methodology for determining coverage areas for DTV facilities differs from that contained in Section 73.684 of the Commission's Rules resulting in an inconsistent and possibly incorrect projection of a station's Grade B contour. This inconsistency should be addressed and clarified.

b. The Longley-Rice Algorithm Cannot Be Used To Evaluate Coverage In Areas of Rugged Terrain. As shown in the Engineering Statement, the Longley-Rice algorithm does not allow broadcasters to predict interference in areas of mountainous terrain. The Commission should address this defect in the application of Longley-Rice and consider whether alternative propagation models should be used in making interference calculations involving mountainous areas.

c. *Discrepancy in Rules.* New Section 73.623(c) of the Commission's Rules includes two technical discrepancies. This section indicates that the D/U ratio to be used for the N+7 taboo is -34 dB; however, on page A-2 of Appendix A to the Sixth R&O, the Commission states that this ratio is -43 dB. In addition, there is a discrepancy regarding the data points to be used with respect to co-channel D/U interference ratios. See Engineering Statement at 4. The Commission also needs to clarify its definition of coverage with respect to UHF channels. See id. at 5.

d. *Type of Interference.* The Commission should clarify how it will treat DTV interference in unpopulated areas as opposed to populated areas.

VI. Conclusion.

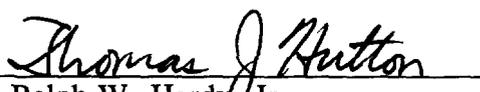
KPDX is fully committed to the implementation of DTV. KPDX also understands that the transition to DTV will involve uncertainties and require flexibility on the part of all broadcasters. Nonetheless, unless broadcasters have the opportunity to comment on OET Bulletin No. 69 before the DTV Table and rules are finalized, the DTV transition is likely to be far more complicated and uncertain than necessary. KPDX urges the Commission to release this document promptly and to provide broadcasters an opportunity for full comment before finalizing the DTV rules.

KPDX also requests reconsideration of its DTV assignment and proposes DTV Channel 44 as an alternative assignment that will allow KPDX to provide better DTV service without increasing interference to other NTSC or DTV operations. KPDX further asks that the Commission clarify certain technical provisions of its DTV rules so that broadcasters may accurately assess and plan for their DTV facilities. Finally, KPDX strongly encourages the

Commission to recognize the value of and significance that LPTV and TV translator stations have in certain areas of the country and adopt rules that will ensure continued LPTV and translator service to the public.

Respectfully submitted,

KPDX LICENSE PARTNERSHIP

By: 
Ralph W. Hardy Jr.
Thomas J. Hutton
Elizabeth A. McGeary

Its Attorneys

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(202) 776-2000

June 13, 1997

EXHIBIT A

Engineering Statement of Hammett & Edison, Inc.

TV Station KPDX • Channel 49 • Vancouver, Washington

Statement of Robert D. Weller, Consulting Engineer

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by KPDX License Partnership, licensee of TV Station KPDX, Channel 49, Vancouver, Washington, to prepare an engineering exhibit in support of its petition for reconsideration of the Fifth and Sixth Report and Orders in Mass Media Bureau Docket No. 87-268, concerning digital television channel allocations.

The Commission Should Assign DTV Channel 44 to KPDX

In the Sixth Report and Order (6th R&O), the Commission assigned DTV Channel 48 to KPDX, NTSC Channel 49, Vancouver, Washington. The specified "replication" parameters of the DTV Channel 48 operation were 103 kilowatts maximum average effective radiated power at 527 meters height above average terrain (HAAT), using a directional antenna pattern derived from that for KPDX contained in the Commission's engineering database. The specified power level would place KPDX at a competitive disadvantage, relative to the other commercial stations in the Portland, Oregon, market. In addition, the proposed channel would require use either of a shared antenna for both NTSC and DTV operations, or installation of external filters to correct the likely intermodulation distortion and self-interference created by the adjacent-channel operations. Finally, neither Channel 48 nor Channel 49 lies within the "guaranteed" core spectrum of Channels 7-46, so the possibility exists that KPDX would be required to construct yet another new facility at the end of the transition period.

Three of the stations in the market received DTV assignments at a power level of at least 960 kW, and two more of the stations in the market received DTV assignments at a power level of 645-705 kW. Only KPDX and KNMT, Channel 24, received assignments of less than 645 kW, with KPDX receiving the lowest power assigned to the market. For its HAAT, Section 73.622(f)(6) of the Rules would normally permit a DTV power level of 446 kW. Inasmuch as there is no equipment commercially available to combine at high power levels adjacent channels, such as 48 and 49, a second antenna will be required for DTV use. Self-interference, where the antenna patterns of adjacent-channel operations do not *exactly* match, also has been raised as a significant possibility* and the operation of two stations so close in frequency is likely to create intermodulation distortion (IMD) in contravention of the Rules. The correction of transmitter-generated IMD will require the installation of expensive filters, which can be avoided simply by the use of a non-adjacent channel.

An allocation study was conducted at the KPDX site, to determine if channels exist that meet the spacing requirements specified in Section 73.623(d). Two TV channels, 42 and 44, were identified

TV Station KPDX • Channel 49 • Vancouver, Washington

as being fully spaced with respect to all existing NTSC and DTV assignments. Channel 44 was selected, since use of this channel would result in less interference being caused to other authorized operations. The Channel 44 allocation conditions were as follows:

<u>Call Sign</u>	<u>City</u>	<u>State</u>	<u>Status</u>	<u>Channel</u>	<u>Distance</u>	<u>Required</u>
KIMATV	YAKIMA	WA	LIC	29	206.8 km	>96.6 km
NEW	PORTLAND REQUESTS A WAIVER OF FREEZE.	OR	APP	30	1.651	<24.1
KROZ	ROSEBURG	OR	LIC	36	258.1	>96.6
	MORTON SITE RESTRICTED-EFFECTIVE 2-27-84	WA		39	122.5	>96.6
NEW	PORTLAND REQUESTS A WAIVER OF FREEZE.	OR	APP	40	17.85	<24.1
NEW	PORTLAND REQUESTS A WAIVER OF FREEZE.	OR	APP	40	1.651	<24.1
	COOS BAY EFFECTIVE 4-09-90.	OR		41	278.6	>96.6
KVEW	KENNEWICK	WA	LIC	42	288.7	>96.6
KATU	PORTLAND	OR	APP	D43	0.696	<32.2
KHCV	SEATTLE	WA	CP MOD	D44	233.7	>223.7
	PARKSVILLE	BC	ALLOC.	44	438.0	>244.6
KNMT	PORTLAND	OR	LIC	D45	1.651	<32.2
KMTXTV	ROSEBURG	OR	CP	46	262.0	>96.6
KYVE	YAKIMA	WA	LIC	47	206.8	>96.6
	LAKE COWICHAN	BC	ALLOC.	48	381.0	>96.6
KPDX	VANCOUVER	WA	LIC	49	0.000	<24.1
KBEH	BELLEVUE	WA	CP MOD	51	228.2	>96.6
	VANCOUVER	BC	ALLOC.	52	417.1	>96.6

The effective radiated power level permitted for fully-spaced operation on Channel 44 at a HAAT of 527 meters is 446 kW, and this omni-directional ERP is requested for the proposed KPDX DTV allotment. An application, requesting use of a directional antenna having a peak ERP of 446 kW or less, will be filed subsequent to allocation by the Commission of the requested channel to KPDX.

Additional Items for Reconsideration

Appendix B of the Sixth Report & Order to Mass Media Docket 87-268 describes the calculations and methodology used to develop the DTV Table of Allotments. Section 73.623(c)(2) of the revised FCC Rules references Appendix B as providing the procedure used to evaluate proposed modifications to allotted DTV facilities, along with OET Bulletin No. 69 which, as of this date, has not been released by the FCC. Appendix B provides a five-page summary of the procedures used to develop the allotment table, but by no means provides adequate guidance for conducting interference evaluations involving the newly-allotted DTV channels, with regard to potential interference to/from existing authorized NTSC facilities, or to/from allotted DTV facilities. A copy of the computer software used to generate the DTV allotment table was obtained from OET and evaluated, and several factors have been identified that are, at least, unusual and, at most, raise significant concerns about the validity of some of the assumptions made by the FCC allotment program. Some of these factors are discussed below.

Determination of Grade B and Replication Contours Ignored FCC Rules

In developing a protected coverage area for allotted DTV facilities, the Commission used the horizontal-plane antenna patterns contained in its engineering database. Use of these patterns can in many instances lead to incorrect projection of the Grade B contour. Hence, the DTV directional antenna (DA) pattern, ERP, population, and area calculations would all be in error. All of these errors tend to penalize the station being analyzed, since the horizontal-plane antenna pattern is usually smaller than the main-beam antenna pattern (and, in any case, cannot be larger). Figure 1 shows Grade B contours for KPDX projected using both the method contained in the Commission's DTV software and the method specified in Section 73.684 of the Commission's Rules. There is a 12.1% difference in coverage area and a 2.0% difference in coverage population between the two methods, due in large part to the Commission's failure to account for the actual elevation pattern of the KPDX antenna, including the use of mechanical beam tilt.

Errors in Longley-Rice Propagation Algorithm Were Ignored

The interference analysis technique employed by the FCC and specified for study of proposed DTV facility changes employs terrain-sensitive calculation methods based on Version 1.2.2 of the ITS Irregular Terrain Model, also known as the Longley-Rice model. The model is used to analyze paths between the transmitter and assumed receiver locations, which are contained within a grid of 4-square kilometer cells covering the protected service area. However, the Longley-Rice model

TV Station KPDX • Channel 49 • Vancouver, Washington

itself is not always capable of determining, within certain confidence limits, whether a particular cell has service. Specifically, in cases where the actual horizon from a given cell or transmitter location is less than 0.1 times or greater than 3 times the distance to the smooth earth horizon, the Longley-Rice algorithm will return an “Error Code 3” that, according to the program documentation, means internal program calculations show parameters out of range, and any reported results are dubious or unusable.

The procedure used by the FCC when such a Longley-Rice error occurs, when determining whether a cell has service or when determining potential interference to a cell, is to mark that cell as “interference-free service” and it is not considered further. While this assumption appears not to introduce significant overall errors in areas of relatively flat terrain, it has been found that the error code is returned much more often for studies involving mountainous terrain between studied transmitter sites and cells.

Figure 2 shows the locations of cells within the assumed KPDX Grade B coverage area where the Commission has assumed coverage, even though the Longley-Rice algorithm has determined that its result may be in error. 6,151 square kilometers (27.6%) of the assumed Grade B land area and 84,054 persons (4.5%) of the assumed Grade B population lie in cells where Longley-Rice returned errors, indicating that the actual coverage (both NTSC and DTV) could be significantly in error. Clearly, the Longley-Rice propagation algorithm is unsuitable for determining accurate interference profiles of areas affected by mountainous terrain.

Additional Clarification Needed

The new Rules (Section 73.623(c)(2)) show the D/U ratio to be used for the “N+7” taboo to be -34 dB, whereas -43 dB is reported in Page A-2 of Appendix A. It seems clear that the value reported in Appendix A is the correct value, since it is based upon ATTC testing, but the Commission needs to clarify this.

Near the edge of noise-limited DTV service, the co-channel D/U interference ratios change. See Section 73.623(c)(2) of the Rules. Only two data points are reported in the rules, although additional points are available from the ATTC tests. Should these points be considered “step” changes or should a curve be constructed to ensure a smooth transition in this area?

Section 73.623(c)(2) permits changes to the DTV allotments if new interference is not caused. However, the type of interference is not defined. Is it area, population, or both that is being protected? It is suggested that the protection from interference of unpopulated areas, such as National Forests, does not serve the public interest.

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Section 73.622(e) defines DTV coverage on UHF channels as the F(50,90) field strength value of 41 dBu. Yet, Appendix B, Page B-1 defines coverage as the field strength value of 40.8 dBu (at the geometric mean frequency of the UHF band), modified by an appropriate dipole factor. Should the 41 dBu figure apply across the entire UHF band, or should it vary with channel? Is 41 dBu or 40.8 dBu the correct threshold value to use? Should similar dipole factors also be applied to low- and high-band VHF assignments?

Summary

TV Station KPDX, NTSC Channel 49, Vancouver, Washington, requests that its DTV allotment be changed from Channel 48 to Channel 44. Since the requested channel is spaced fully with respect to all existing and proposed NTSC and DTV assignments, it is proposed that full-power, omnidirectional operation be permitted on this channel. The Commission's Fifth and Sixth Report and Order in Docket 87-268 leaves many questions unanswered. It is hoped that, particularly with regard to the technical issues raised above, the Commission will clarify its proposed rules where necessary.



A handwritten signature in black ink that reads "R. D. Weller".

Robert D. Weller, P.E.

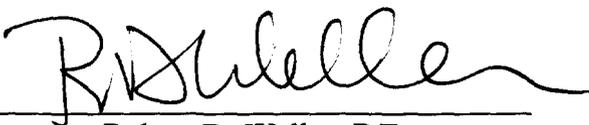
June 11, 1997

Affidavit

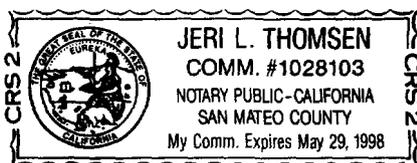
State of California |
County of Sonoma | ss:

Robert D. Weller, being first duly sworn upon oath, deposes and says:

1. That he is a qualified Registered Professional Engineer, holds California Registration No. E-12627 which expires September 30, 1999, and is employed by the firm of Hammett & Edison, Inc., Consulting Engineers, with offices located near the city of San Francisco, California,
2. That he graduated from The University of California, Berkeley, in 1984, with a Bachelor of Science degree in Electrical Engineering and Computer Science, was an electronics engineer with the Federal Communications Commission from 1984 to 1993, with specialization in the areas of FM and television broadcast stations, cable television systems and satellite systems, and has been associated with the firm of Hammett & Edison, Inc., since June 1993,
3. That the firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by KPDX License Partnership, licensee of TV Station KPDX, Channel 49, Vancouver, Washington, to prepare an engineering exhibit in support of its petition for reconsideration of the Fifth and Sixth Report and Orders in Mass Media Bureau Docket No. 87-268, concerning digital television channel allocations,
4. That he has carried out such engineering work and that the results thereof are attached hereto and form a part of this affidavit, and
5. That the foregoing statement and the report regarding the aforementioned engineering work are true and correct of his own knowledge except such statements made therein on information and belief and, as to such statements, he believes them to be true.


Robert D. Weller, P.E.

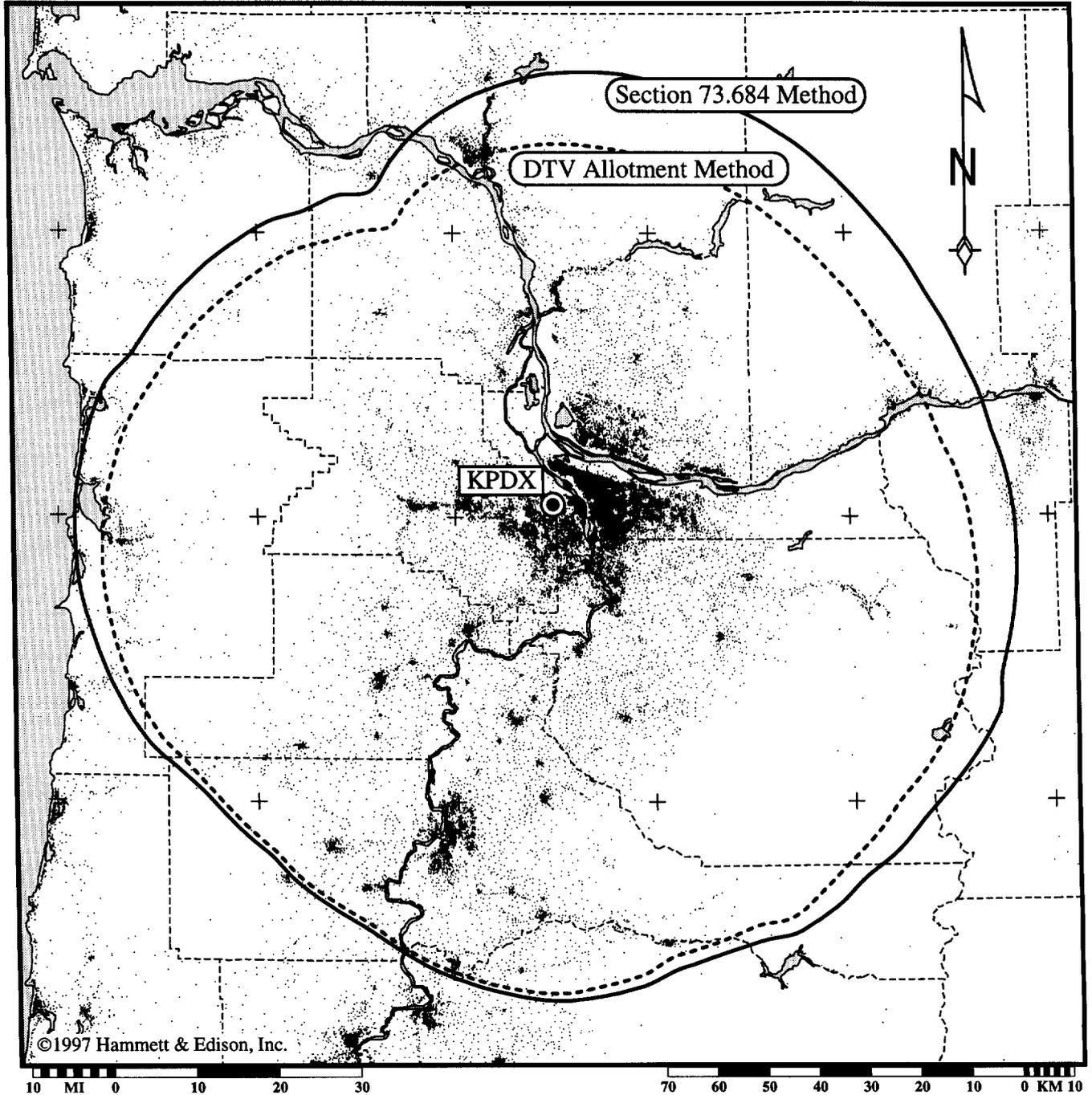
Subscribed and sworn to before me this 11th day of June, 1997





TV Station KPDX • Channel 49 • Vancouver, Washington

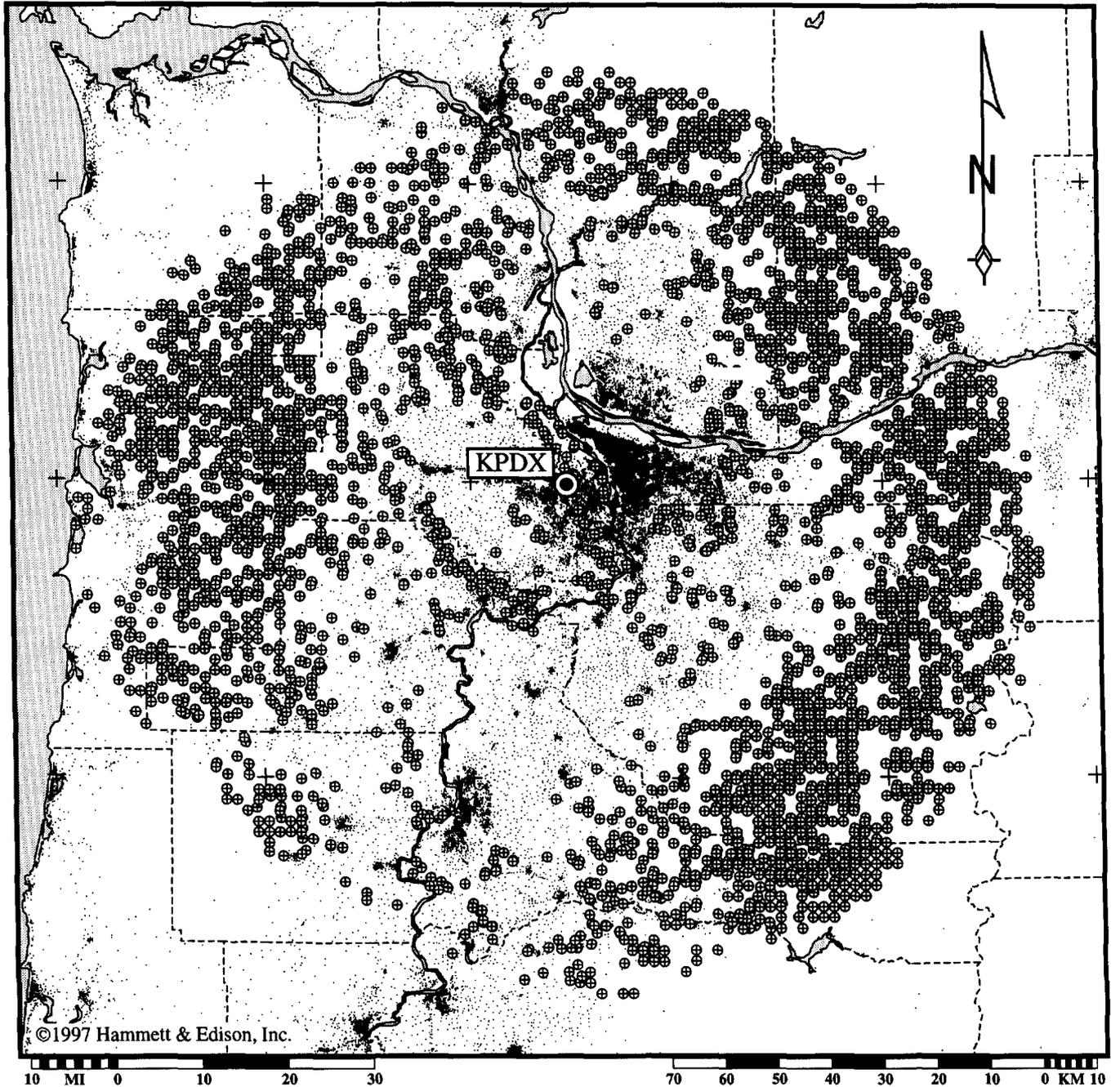
Grade B Coverage Contours
DTV Allotment Method vs. Section 73.684 Method
3,160 kilowatts (DA), 616 meters AMSL



Geographic coordinate marks shown at 30-minute increments. Map data taken from Sectional Aeronautical Charts, published by the National Ocean Survey. Dots represent 1990 U.S. Census Blocks.

TV Station KPDX • Channel 49 • Vancouver, Washington

Cells Within Grade B Contour
Where Longley-Rice Algorithm Returned an Error
and was Unable to Calculate Path Loss



⊕ Symbol indicates Longley-Rice Error #3.

Geographic coordinate marks shown at 30-minute increments. Map data taken from Sectional Aeronautical Charts, published by the National Ocean Survey. Dots represent 1990 U.S. Census Blocks.