APPENDIX A

Engineering Statement for KHET-DT

ENGINEERING STATEMENT SUPPORTING A PETITION FOR RECONSIDERATION

prepared for

Hawaii Public Television Foundation

KHET-DT Honolulu, Hawaii

Facility ID: 26431

Ch. 11 3.25 kW (MAX-DA) 625.6 m

Hawaii Public Television Foundation ("*HPTF*") is the licensee of analog television station KHET(TV) Channel 11 and digital station KHET-DT Channel 18, Facility ID: 26431, Honolulu, Hawaii. *HPTF* elected (for KHET's post-transition facility) operation on its current analog Channel 11 in place of the 1998 allotted Channel 18. However, circumstances at the allotment site require *HPTF* to lower the antenna radiation center and to modify the current allotment directional antenna pattern. Accordingly, the instant engineering statement has been prepared to support a request for a change in the station's "certification" to permit modification of the allotment directional antenna pattern.

Change in Certification

HPTF proposes herein to modify its original certification to specify operation on Channel 11 using a different directional antenna pattern operating from the post-transition allotment site. The technical details of the proposed facility are provided in **Table I**. The proposed directional antenna parameters were provided by the antenna manufacturer and represent the design of a real-world antenna not a hypothetical "carry-over" antenna pattern derived from the original UHF allotment. Further, due to space concerns on the tower itself, the antenna radiation center must be lowered to accommodate other site users. Thus, construction of the proposed facility can be more easily implemented prior to the analog shut down date and will not result in a reduction in coverage.

Figure 1 provides a coverage comparison of the allotted KHET 7th R&O[1] Channel 11 service contour with the proposed replacement digital facility service contour. As demonstrated the authorized coverage from the allotted KHET facility is not extended over land areas.

For completeness, a detailed interference study was conducted in accordance with the terrain dependent Longley-Rice point-to-point propagation model, per the Commission's Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating*

[1] See Appendix B, "*Seventh Report and Order And Eighth Further Notice of Proposed Rule Making*", MB Docket No. 87-268, FCC 07-138, Released August 6, 2007.

TV Coverage and Interference, July 2, 1997 ("OET-69")[2]. The interference study examined the net change in interference as experienced by other stations that would result from the proposed facility (in lieu of the reference KHET-DT allotted facility). Facilities listed in Appendix B of the Seventh Report and Order were studied along with a proposed change in the certified facility for KMEB-DT, Channel 10, Wailuku, HI. The results indicated that the instant proposal does not cause interference nor does it increase interference to other affected stations[3]. Due to the roughness of the terrain in the Hawaiian Islands, the studies employed a 0.5 km cell size and a terrain increment of 0.5 km. Therefore, **processing using a 0.5 km cell size and a 0.5 km terrain increment is hereby respectfully requested.**

Conclusion

As demonstrated above, coverage for the KHET-DT "post-transition" operation will be not be compromised by the change in certification proposed herein. By changing the KHET-DT certification, the proposed DTV facility can be easily implemented so that the analog shutdown deadline of February 17, 2009 can be met.

[2] The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. Due to the roughness of the terrain, a reduced cell size of 0.5 km was used. Further, the terrain increment was also reduced to 0.5 km. Comparisons of various results of this computer program (run on a Sun Computer) to the Commission's implementation of OET-69 show good correlation.

[3] A change of certification proposal is also being submitted under separate cover for co-owned KMEB-DT, Ch. 10, Wailuku, HI. The instant proposal was also studied to determine its impact on the proposed changes for KMEB-DT. Likewise, the impact of the proposed changes to KMEB-DT was studied to determine the impact on the instant KHET-DT proposal. The study results indicate that no interference is predicted to either proposal.

Certification

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief. Mr. Mertz is a principal in the firm of *Cavell, Mertz & Associates, Inc.*, holds a Bachelor of Science degree from Oglethorpe University, and has submitted numerous engineering exhibits to the Federal Communications Commission. His qualifications are a matter of record with that agency.

Richard H. Mertz
November 7, 2007

Cavell, Mertz & Associates, Inc.
7839 Ashton Avenue
Manassas, VA 20109
(703) 392-9090

Attachments

Table I	Proposed Allotment Parameters
Figure 1	Coverage Contour Comparison

Table I

PROPOSED ALLOTMENT PARAMETERS

prepared for

Hawaii Public Television Foundation

KHET-DT Honolulu, Hawaii

Facility ID: 26431

Ch. 11 3.25 kW (MAX-DA) 625.6 m

Channel	DTV Channel 11
Site Coordinates	21° 24' 03" N 158° 06' 10" W (NAD-27)
Radiation Center	801.6 meters above mean sea level 625.6 meters above average terrain
Effective Radiated Power	3.25 kilowatts

Directional Antenna Relative Field Pattern

Azimuth (°T)	Relative Field	Azimuth (°T)	Relative Field
0	0.511	160	0.369
2	0.500	170	0.277
10	0.591	180	0.098
20	0.706	190	0.022
23	0.721	200	0.030
30	0.667	210	0.037
40	0.530	220	0.018
44	0.500	230	0.169
50	0.591	240	0.327
60	0.868	250	0.398
65	0.913	260	0.577
70	0.875	270	0.780
80	0.718	280	0.913
82	0.710	290	0.982
90	0.798	295	1.000
100	0.946	300	0.989
110	1.000	310	0.898
120	0.959	320	0.737
130	0.869	330	0.769
140	0.705	340	0.912
150	0.491	350	0.773

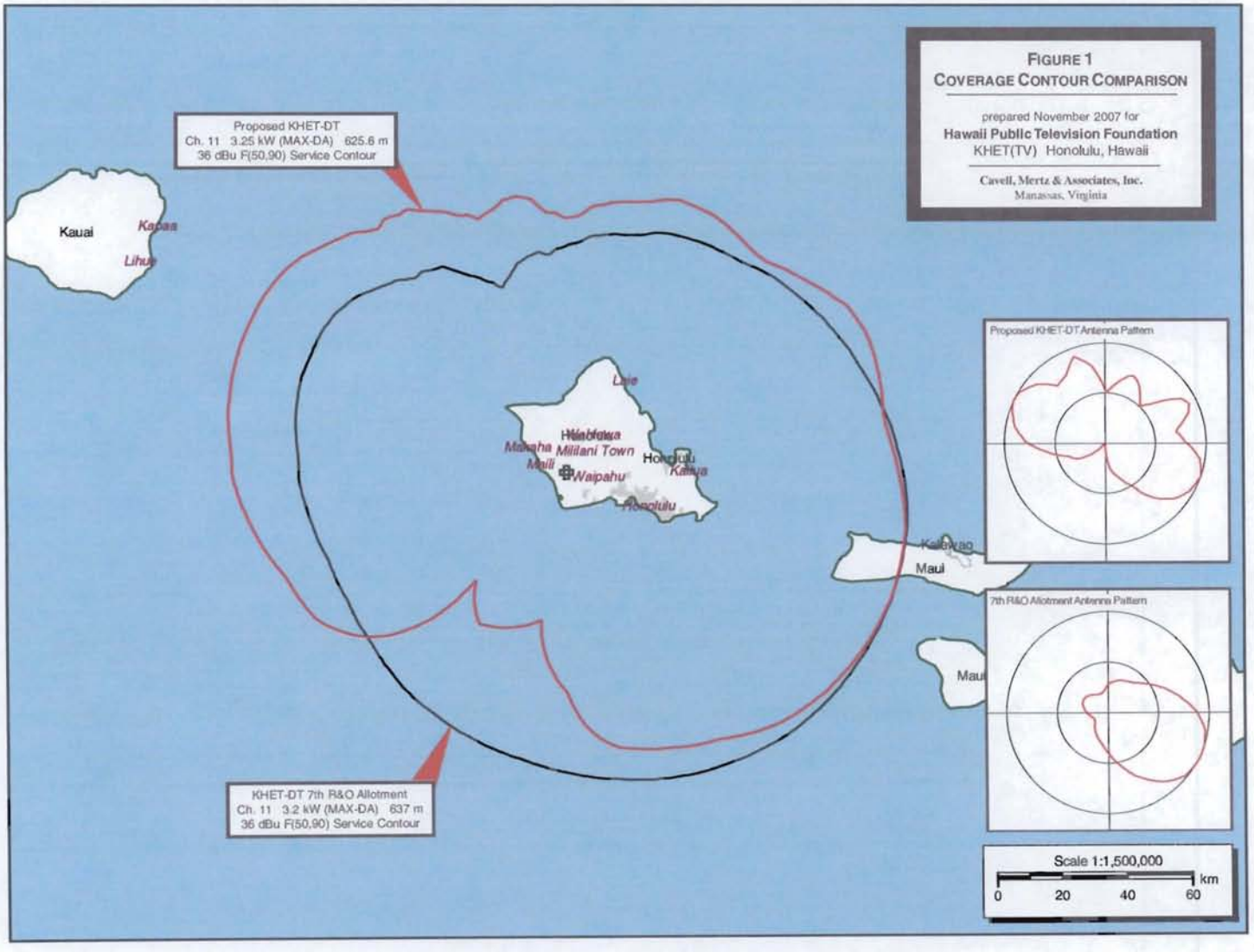
FIGURE 1
COVERAGE CONTOUR COMPARISON
prepared November 2007 for
Hawaii Public Television Foundation
KHET(TV) Honolulu, Hawaii
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
Proposed KHET-DT
Ch. 11 3.25 kW (MAX-DA) 625.6 m
36 dBu F(50,90) Service Contour
KHET-DT 7th R&O Allotment
Ch. 11 3.2 kW (MAX-DA) 637 m
36 dBu F(50,90) Service Contour
Kauai
Lihue
Mililani Town
Honolulu
Waipahu
Maui
Proposed KHET-DT Antenna Pattern
7th R&O Allotment Antenna Pattern
Scale 1:1,500,000
km
0
20
40
60

APPENDIX B

Engineering Statement for KMEB-DT

ENGINEERING STATEMENT SUPPORTING A PETITION FOR RECONSIDERATION

prepared for

Hawaii Public Television Foundation

KMEB-DT Wailuku, Hawaii

Facility ID: 26428

Ch. 10 3.6 kW (MAX-DA) 747 m

Hawaii Public Television Foundation ("HPTF") is the licensee of analog television station KMEB(TV) Channel 10 and digital station KMEB-DT Channel 30, Facility ID: 26428, Wailuku, Hawaii. *HPTF* elected (for KMEB's post-transition facility) operation on its current analog Channel 10 in place of the 1998 allotted Channel 30. However, due to governmental action, KMEB is being required to relocate the analog station to a new site a considerable distance down the side of Haleakala volcano. An application to relocate KMEB is currently pending before the Commission ("CP Application", BPET-20070321AAE). The allotted post-transition Channel 10 digital facility[1] is also located at the current KMEB analog site. Since *HPTF* is being required to vacate this site, operation of the allotted post-transition facility will not be possible. Accordingly, the instant engineering statement has been prepared to support a request for a change in the station's "certification" to specify the proposed Channel 10 analog site for KMEB's post-transition digital operation.

Change in Certification

HPTF proposes herein to modify its original certification to specify operation on Channel 10 from the proposed replacement analog site using the directional antenna pattern and height specified in the CP Application with an ERP of 3.6 kW. The technical details of the proposed facility are provided in **Table I**. The proposed directional antenna relative field values are identical to those specified in the CP Application since *HPTF* proposes to employ the proposed Channel 10 antenna for KMEB's post-transition operation.

Since the instant proposal calls for relocation of the analog station to a new site, **Figure 1** provides a coverage comparison of the proposed KMEB analog Channel 10 Grade B contour with the proposed Channel 10 post-transition service contour. Even though the same antenna is proposed for operation of the analog station and later the post-transition digital facility, differences in the propagation curves and the severe nature of the surrounding terrain provides slightly different coverage foot-prints. Limiting the power to maintain the digital coverage foot-

[1] See Appendix B, "*Seventh Report and Order And Eighth Further Notice of Proposed Rule Making*", MB Docket No. 87-268, FCC 07-138, Released August 6, 2007.

print within the proposed Grade B contour would cause a reduction in coverage post-transition coverage in heavily populated areas. Therefore, consideration of the mild contour extension over water and sparsely populated areas is respectfully requested.

For completeness, a detailed interference study was conducted in accordance with the terrain dependent Longley-Rice point-to-point propagation model, per the Commission's Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, July 2, 1997 ("OET-69")[2]. The interference study examined the net change in interference as experienced by other stations that would result from the proposed facility (in lieu of the reference KMEB-DT allotted facility). Facilities listed in Appendix B of the Seventh Report and Order were studied along with a proposed change in the certified facility for KHET-DT, Channel 11, Honolulu, HI. The results indicated that the instant proposal does not cause interference nor does it increase interference to other affected stations[3] as demonstrated in **Table II**. As shown therein, a *decrease* in interference population to KALO-DT, Channel 10, Honolulu, HI is predicted.

Conclusion

Modification of the KMEB-DT certification as proposed herein is necessitated by the required relocation of the analog facility. The change proposed herein for KMEB-DT can be easily implemented so that the analog shutdown deadline of February 17, 2009 can be met.

[2] The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A standard cell size of 2.0 km was used. Comparisons of various results of this computer program (run on a Sun Computer) to the Commission's implementation of OET-69 show good correlation.

[3] A change of certification proposal is also being submitted under separate cover for co-owned KHET-DT, Ch. 11, Honolulu, HI. The instant proposal was also studied to determine its impact on the proposed changes for KHET-DT. Likewise, the impact of the proposed changes to KHET-DT was studied to determine the impact on the instant KMEB-DT proposal. The study results indicate that no interference is predicted to either proposal.

Certification

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief. Mr. Mertz is a principal in the firm of *Cavell, Mertz & Associates, Inc.*, holds a Bachelor of Science degree from Oglethorpe University, and has submitted numerous engineering exhibits to the Federal Communications Commission. His qualifications are a matter of record with that agency.

Richard H. Mertz
November 7, 2007

Cavell, Mertz & Associates, Inc.
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Manassas, VA 20109
(703) 392-9090

Attachments

Table I	Proposed Allotment Parameters
Table II	Interference Study Results
Figure 1	Coverage Contour Comparison

Table I

PROPOSED ALLOTMENT PARAMETERS

prepared for

Hawaii Public Television Foundation

KMEB-DT Wailuku, Hawaii

Facility ID: 26428

Ch. 10 3.6 kW (MAX-DA) 747 m

Channel	DTV Channel 10
Site Coordinates	20° 39' 37" N 156° 21' 46" W (NAD-27)
Radiation Center	1410 meters above mean sea level 747 meters above average terrain
Effective Radiated Power	3.6 kilowatts

Directional Antenna Relative Field Pattern

(FCC Antenna ID: 78377)

Azimuth (°T)	Relative Field	Azimuth (°T)	Relative Field
0	0.298	180	0.778
10	0.154	190	0.628
20	0.043	200	0.453
30	0.019	210	0.296
40	0.010	220	0.191
50	0.010	230	0.191
60	0.019	240	0.296
70	0.043	250	0.453
80	0.154	260	0.628
90	0.298	270	0.778
100	0.462	280	0.897
110	0.628	290	0.974
120	0.778	300	1.000
130	0.897	310	0.974
140	0.974	320	0.897
150	1.000	330	0.778
160	0.974	340	0.628
170	0.897	350	0.462

Additional Azimuths:	
225	0.178

Table II

INTERFERENCE STUDY RESULTS

prepared for

Hawaii Public Television Foundation

KHET-DT Honolulu, Hawaii

Facility ID: 26428

Ch. 10 3.6 kW (MAX-DA) 747 m

Channel	Affected Station	City	State	7th R&O Table Baseline (2000 Census)	Calculated Baseline (2000 Census)	Interference Population 7th R&O facility (2000 Census)	Interference Population with Proposal (2000 Census)	Population Difference	New Interference
9	KGMD-TV	Hilo	HI	79,000			- - -No interference - - -		
9	KGMB(TV)	Honolulu	HI	826,000			- - -No interference - - -		
10	KALO(TV)	Honolulu	HI	812,000	812,748	65,929	46,590	-19,339	-2.38%
11	KHAW-TV	Hilo	HI	78,000			- - -No interference - - -		
11	KHET(TV)	Honolulu	HI	862,000			- - -No interference - - -		

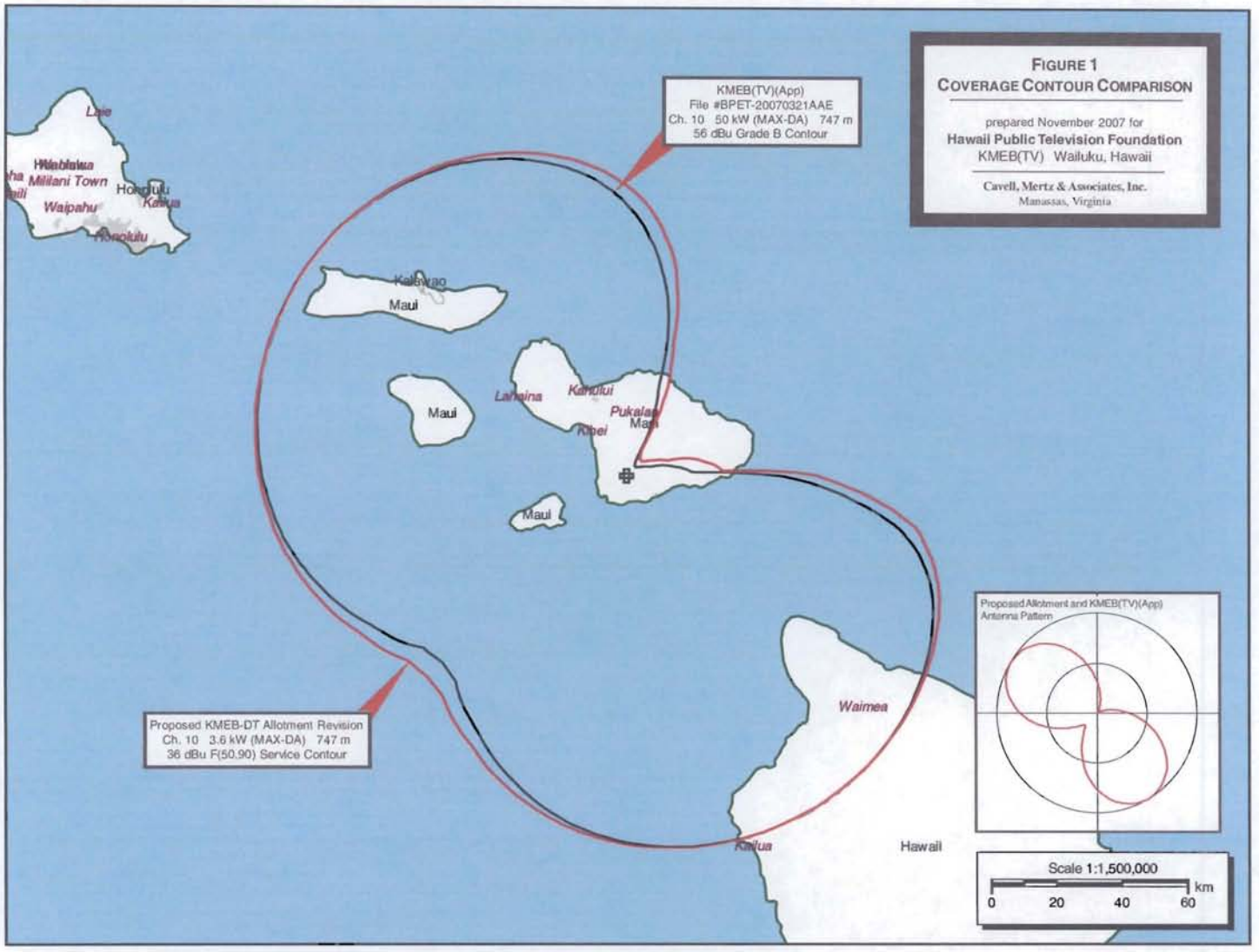
FIGURE 1
COVERAGE CONTOUR COMPARISON
prepared November 2007 for
Hawaii Public Television Foundation
KMEB(TV) Wailuku, Hawaii
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
KMEB(TV)(App)
File #BPET-20070321AAE
Ch. 10 50 kW (MAX-DA) 747 m
56 dBu Grade B Contour
Proposed KMEB-DT Allotment Revision
Ch. 10 3.6 kW (MAX-DA) 747 m
36 dBu F(50,90) Service Contour
Proposed Allotment and KMEB(TV)(App)
Antenna Pattern
Scale 1:1,500,000
0 20 40 60 km
Lihue
Honolulu
Waipahu
Kailua
Maui
Lahaina
Kahului
Pukalani
Kihei
Waimea
Hawaii