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April 27, 2005

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Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands* – WT Docket No. 03-66 – **WRITTEN EX PARTE PRESENTATION**

Dear Ms. Dortch:

Trans Video Communications hereby submits the attached engineering Statement of Hammett & Edison, Inc., to address issues raised for the first time in Reply Comments filed by NY3G Partnership in this Proceeding. Copies of this written ex parte are being sent today to the persons copied on this letter

Please feel free to contact me with any questions.

Respectfully submitted,

Michael Lazarus

Michael Lazarus
Counsel to Trans Video Communications

Enclosure

cc: Chairman Kevin J. Martin
Commissioner Kathleen Q. Abernathy
Commissioner Michael J. Copps
Commissioner Jonathan S. Adelstein
Catherine Seidel

Trans Video Communications • F-Group EBS Stations KNZ-70 and KVS-31
Queens/Brooklyn, New York

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by Trans Video Communications (TVC), licensee of F-Group EBS Stations KNZ-70 (Mary Louis Academy, Queens, NY) and KVS-31 (St. Cecilias School, Brooklyn, NY), to prepare this engineering exhibit in support of an *ex parte* response to the February 8, 2005, WT Docket 03-66 reply comments of New York 3G Partnership (NY3G), licensee of F-Group BRS Station WMY-467, New York, New York.

I. The Standard GSA Approach Is Workable in New York City

1. In its reply comments, NY3G argues that the standard split-the-PSA-overlap "football" approach for deriving a Geographic Service Area (GSA) would not work in New York City. The Protected Service Areas (PSAs), and derived GSAs, for WMY-467 and for KNZ-70/KVS-31 in combination are shown in the attached Figure 1.

2. NY3G claims that there would be a 15.6-km wide "no man's land" centered on the GSA boundary, within which neither licensee could operate. However, this is incorrect. When one applies the -1.51 dB/km Manhattan metro attenuation factor used by NY3G* in combination with low power base stations using directional antennas, NY3G's asserted "exclusion zone" virtually disappears. As will be demonstrated, these low power base stations employing directional antennas could be placed very close to the GSA boundary without violating the 47 dBu BRS GSA boundary field strength limit.

II. Ability To Serve Subscribers Near the GSA Border

3. NY3G argues that even a 0.1 watt EIRP base station could not be placed within 7.8 km of a GSA border without violating the 47 dBu BRS GSA border signal strength limit; this is incorrect. The 47 dBu signal strength limit is a measured limit, with the measurement occurring at just 1.5 meters (5 feet) AGL. Thus, both a base station's azimuth and elevation patterns must be taken into account when determining the EIRP towards a point on the GSA border. Also, at 2.6 GHz foliage and/or building "clutter" losses can be significant, especially in a major metro like New York City and a measurement height of just 1.5 meters AGL. NY3G recognized this in its reply comments, by its admission that in reality a predicted free-space 47 dBu contour distance is more likely to be just 2 kilometers in a heavily constructed area like Manhattan. This represents a -11.8 dB clutter factor, or -1.51 dB/km.

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* See Paragraph 5 of the engineering statement submitted in support of the NY3G reply comments, where NY3G's engineer states that a calculated 2.6 GHz BRS free space 47 dBu field strength propagation distance of 7.8 km would be expected to only extend to an actual distance of 2 km in New York City. This is an attenuation of 11.8 dB, or -1.51 dB/km.

4. A base station panel antenna can easily have a front-to-back ratio of 20 dB, when a directional pattern is needed. If a cell is to be near a GSA boundary, then one intentionally selects one of these highly directional antenna patterns that will suppress radiation towards the GSA border while still providing service in a direction away from the GSA border. For example, a Kathrein Model AP18-1900/090D 1.9 GHz Personal Communications Service (PCS) base station antenna has a front-to-back ratio of 23, as documented in the manufacturer's literature, Figure 2. Although this is a PCS antenna, there is no reason to expect that similar antennas won't become available for the 2.6 GHz BRS band. To be conservative, a front-to-back ratio of just 20 dB will be assumed. Therefore an EIRP of 0.1-watt (20 dBm) in the main beam base station will have an EIRP of just 0.001 watt (0 dBm) in the opposite direction, towards the to-be-protected GSA border. Now the free-space distance to the 47 dBu contour is just 0.78 kilometers. Applying the -1.51 dB/km clutter factor shrinks the distance to 0.42 km. So, NY3G could place a base station within 0.42 km of the GSA border, thus giving effective service very close to the GSA border.

5. The WMY-467/KNZ-70/KVS-31 situation is unusual, in that in the vicinity of WMY-467 and KNZ-70 the GSA boundary follows the East River, a natural boundary. This will mitigate cross-GSA border interference in those areas. NY3G and the Trans Video Communications would be free to enter into a custom agreement ceding slivers of land separated by the East River, but on the "wrong" side of their GSA border, as being in the other side's operational area. For example, the small sliver of land on the SE portion of the Manhattan Borough could be ceded to NY3G, even though it is on the Trans Video Communications' side of the GSA border, and the sliver on land on the NW edge of the Queens Borough could be ceded to the Trans Video Communications, even though it is on NY3G's side of the GSA border (see Figure 3).

6. A separate issue is raised in connection with the use of BRS handsets or customer premises equipment (CPE). Unlike a base station, where the location, antenna type and antenna orientation are known, BRS handsets and CPE devices would be in the physical control of the subscriber, and, as NY3G notes, must use an omnidirectional antenna, because the orientation of the handset to a base station varies. However, the likelihood of NY3G handsets or CPE devices in Eastern Manhattan causing interference to the current KNZ-70 and KVS-31 operations would be low, if those handsets/CPEs are programmed to only transmit if they detect a NY3G base station signal strength of 47 dBu or stronger. Because the present KNZ-7/KVS-31 EBS operation includes fixed receive sites, and since those fixed receive sites utilize highly directional receiving antennas, it is unlikely that interference would be caused to the Trans Video Communications' operations.

7. Even if TVC or its lessee deploys its own system of base stations and mobile/itinerant stations, while the possibility of interference near the GSA border is increased, it is still not inevitable. Careful

coordination between Trans Video Communications base stations near the GSA border, and NY3G base stations near the GSA border, combined with other coordination measures, would be effective in avoiding most such interference.

8. The need to avoid interference in the vicinity of a GSA border is hardly unique to the WMY-467/KNZ-70/KVS-31 situation. Rather, interference avoidance techniques such as cross-polarization, directional antennas, handset power control, frequency coordination, and the astute locating of cells near a GSA border to take full advantage of terrain and man-made obstructions, will need to be played out throughout the country.

III. WMY-467 Signal Strength at the GSA Border

9. NY3G also states that high-powered operations by TVC and NY3G in the mid band segment (MBS) would be limited in the same way, creating a 7.8-kilometer "exclusion zone" on each side of the GSA border (see Footnote 8 o f the engineering statement submitted in support of the NY3G reply comments). But a close evaluation of NY3G's existing high-powered transmitting facilities that statement to be wrong as well. According to the Universal Licensing System (ULS), the WMY-467 transmitting antenna is a 12-bay vertically-polarized Andrew Model HMD12VC aimed at 299°T and having 2° of electrical beam tilt (ebt). The antenna is side-mounted on the west side of the ESB, at the 82nd floor, and has a center-of-radiation height of 280.8 m (921 feet) AGL and 296.3 m (972 feet) AMSL. The main beam equivalent isotropic radiated power (EIRP) is 51.0 dBm/channel, or 126 watts/channel (76.8 watts/channel effective radiated power (ERP)).

10. As shown by the attached Figure 3, the closest point of the GSA boundary, Point A, is approximately 2.2 kilometers southeast of WMY-467, and falls in the East River. From the WMY-467 transmitting antenna, the azimuth to Point A is 131.2°T and the depression angle is 7.6° below the horizontal. At 131°T, the WMY-467 azimuth pattern has a relative field value of 0.13, and the elevation pattern has a relative field value of 0.27 (that is, a depression angle of 7.6° is 5.6° below the main beam of the elevation pattern). Thus, the ERP towards Point A is just (76.8 watts)$(0.13^2)(0.27^2)$, or 0.0946 watts. Based on free space, this gives a calculated field strength of 59.9 dB, or 12.9 dB above the 47 dBu BRS limit at a GSA border.

11. However, because the WMY-467 transmitting antenna is side-mounted at the 82nd floor on the west side of the ESB, radiation towards Point A will have to first go through, or diffract around, the ESB. At 2.6 GHz the ESB obstruction will be at least 12.9 dB, and probably more like 20 to 30 dB, or even more. Since the 47 dBu field strength limit is a measured limit, at 1.5 meters (5 feet) AGL, this means that any actual measurement at Point A would undoubtedly show a field strength of less than 47 dBu. Further, it is another half-kilometer or so along the 131.2°T radial from WMY-467 to KVS-31

before the first land is reached, so measurements at 1.5 m AGL on the KVS-31/KNZ-70 side of the GSA would return a further attenuated WMY-467 signal. When building blockages that would undoubtedly exit for a 1.5-m AGL field strength measurement are added in, the WMY-467 field strength at the closest land portion of the KVS-31/KNZ-70 GSA border will clearly meet the 47 dBu limit. Thus, the "no man's land" claimed by NY3G will not exist.

IV. KNZ-70 PFD at the GSA Border

12. Similarly, the existing KNZ-70 transmitting facilities would not exceed the EBS PFD limit at the GSA border. KNZ-70 transmits omnidirectionally from a tower on the Mary Louis Academy, using an Andrew Model HMD12HO transmitting antenna with 0.5° ebt. The EIRP is 50.5 dBm/channel, or 112 watts/channel. From the KNZ-70 transmitting antenna to Point B, the closest land approach to the GSA border, the depression angle if 0.43° below the horizontal, or essentially in the main beam of the elevation pattern. Thus, the full 112 watts EIRP is aimed at Point B. Based on free space, the calculated PFD at Point B is -72.8 dBW/m^2, or 0.2 dB above the -73 dBW/m^2 limit. However, when building and foliage "clutter" losses are added, any actual measurement of the PFD at 1.5 meters AGL at Point B will be less than -73 dBW/m^2. Further, Point B falls over water. The closest land on the WMY-467 side of the GSA is another 1 kilometer distant. At this location, Point B', the free-space PFD is -73.5 dBW/m^2, or 0.5 dB below the PFD limit. Again, due to clutter losses, actual PFD measurements at Point B' would return a significantly lower value. So gain, the claimed "no man's land" would not exist.

V. KVS-31 PFD at the GSA Border

13. Finally, the existing KVS-31 transmitting facilities also would not exceed the EBS PFD at the GSA border. KVS-31 also transmits omnidirectionally, from a transmitting antenna on top of the St. Cecilia School in Brooklyn, using a 4-bay Micro-Link Model AT-4V transmitting antenna, with no ebt. The EIRP is 44.0 dBm/channel, or 25.1 watts/channel. From the KVS-31 transmitting antenna to Point A, the closest approach to the GSA border, the depression angle is 0.86° below the horizontal. For a 4-bay antenna this means that Point A is, for all practical purposes, in the main beam of the elevation pattern. Thus, once again, the full EIRP is being radiated towards the GSA border (Point A). Based on free space, the calculated PFD at 1.5 m AGL at Point A is -65.6 dBW/m^2, or 7.4 dB above the -73 dBW/m^2 PFD limit. However, when building and foliage attenuation are taken into account, as will always be the case for a measured PFD, it is likely that once again the measured PFD will be at or below the -73 dBW/m^2 limit. Further, as was the case for KNZ-70, Point A falls over water, in the East River. The closest land along the 311.2°T radial from KVS-31 to WMY-467 is another 0.9 kilometers distant (Point A'), giving a total distance from KVS-31 of approximately 3.8 kilometers. At this distance the free-space PFD is -68.6 dBW/m^2, or just 4.4 dB above the PFD limit. Over the

3.8-kilometer path from kVS-31 transmitting antenna to Point A' there will assuredly be at least 4.4 dB of clutter losses at 2.6 GHz. Thus, once again the claimed "no man's land" would not exist.

VI. Summary

14. The WMY-467/KNZ-70/KVS-31 situation is no more problematic than other BRS/EBS stations with heavily overlapping PSAs, and thus often generating odd looking GSA boundaries that generally do not adhere to city or county boundaries, or to natural boundaries. The GSA split-the-football solution to the gridlock situation caused by overlapping PSAs, potentially requiring "consent" letters in order to deploy, was an industry consensus proposal, and was ultimately adopted by the Commission is the WT Docket 03-66 rulemaking. It was and is the best and most reasonable solution to making improved and more efficient use of the 2,496–2,690 MHz BRS/EBS band.

List of Figures

In carrying out these engineering studies, the following attached figures were prepared under my direct supervision:

1. Map showing the WMY-467, KNZ-70 and KVS-31 PSAs and GSAs.
2. Kathrein Model AP18-1900/090D antenna pattern
3. Close up map of the WMY-467/KNZ-70/KVS-31 GSA border.

REGISTERED PROFESSIONAL ENGINEER
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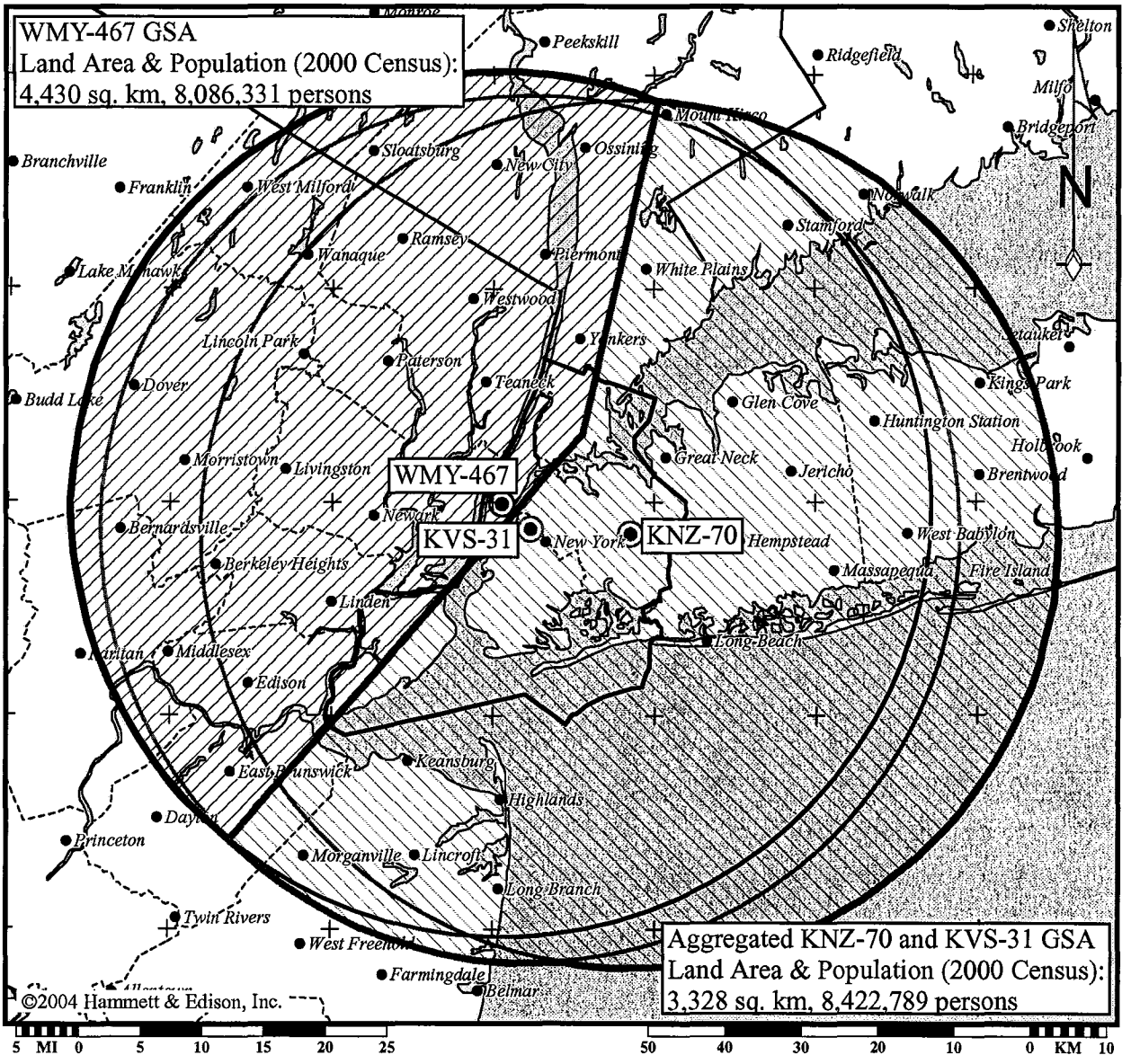
No. 11654
Exp. 9-30-06
ELECTRICAL
STATE OF CALIFORNIA

Dane E. Ericksen, P.E.

April 25, 2005

Trans Video Communications • F-Group EBS Stations KNZ-70 and KVS-31
Queens/Brooklyn, New York

Aggregated KNZ-70 and KVS-31 F-Group GSAs
WMY-467, New York City F-Group PSA



Lambert conformal conic map projection. Map data taken from Sectional Aeronautical Charts, published by the National Ocean Survey. Geographic coordinate marks shown at 15-minute increments. City limits shown taken from U.S. Census Bureau TIGER/Line 2000 data.

Trans Video Communications • F-Group EBS Stations KNZ-70 and KVS-31
Queens/Brooklyn, New York

KATHREIN
SCALA DIVISION

AP18-1900/090D
90° Panel Antenna

Kathrein-Scala vertically polarized panels are part of a series of antenna products for PCS, PCN, and other applications in the 1850-1990 MHz band, featuring:

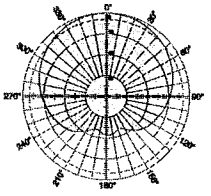
- Patented manufacturing techniques with materials selected for long life and reliability in space diversity systems.
- Superior electrical performance, with low VSWR, wide bandwidth, flat frequency response, and extremely low intermodulation products.
- An extremely low profile design provides minimal visual impact.
- High strength pultruded fiberglass radomes.
- Downtilt options.

Specifications:

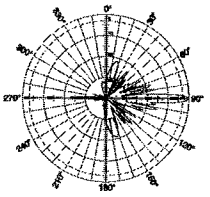
Frequency range	1850–1990 MHz
Gain	18 dBi
Impedance	50 ohms
VSWR	< 1.3:1
Intermodulation (2x20w)	IM3: -150 dBc
Polarization	Vertical
Front-to-back ratio	>23 dB
Maximum input power	200 watts (at 50°C)
H-plane beamwidth	90 degrees
E-plane beamwidth	4.5 degrees
Electrical downtilt	0, 2, 4, or 6 degrees
Connector	7/16 DIN female
Weight	15.2 lb (6.9 kg)
Dimensions	76.7 x 6.1 x 2.25 inches (1948 x 155 x 57 mm)
Equivalent flat plate area	4.39 ft² (0.407 m²)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	91 x 8 x 6 inches (2311 x 203 x 152 mm)
Shipping weight	21 lb (9.5 kg)
Mounting	Fixed and tilt-mount options are available for 1.2 to 5.3 inch (30 to 135 mm) OD masts. Panel without electrical downtilt can be inverted.

See reverse for order information.

*Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



H-plane
Horizontal pattern
V-polarization



E-plane
Vertical pattern
V-polarization

10135-F

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
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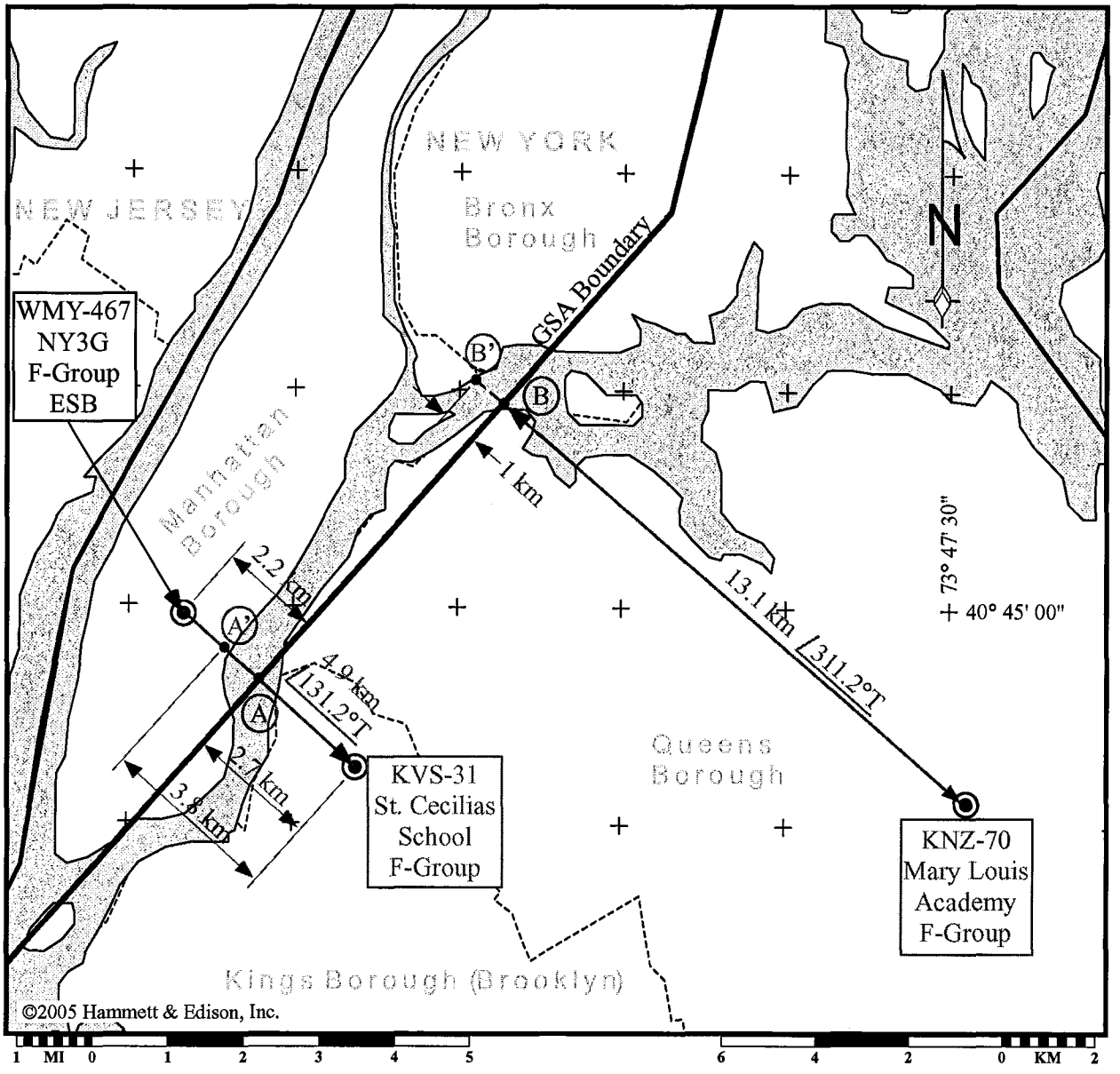
Trans Video Communications • F-Group EBS Stations KNZ-70 and KVS-31
Queens/Brooklyn, New York

WMY-467/KNZ-70/KVS-31 GSA Boundary



Transverse Mercator conic map projection. Map data taken from Sectional Aeronautical Charts, published by the National Ocean Survey. Geographic coordinate marks shown at 2-minute 30-second increments. State and county lines shown taken from U.S. Census Bureau TIGER/Line 2000 data.