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- "Exact Consumer Surplus and Deadweight Loss," working paper 1979, American Economic Review, 71, 1981.
- "Appliance Purchase and Usage Adaptation to a Permanent Time of Day Electricity Rate Schedule," with J. Trimble, August 1983; Journal of Econometrics, 1984.
- "Evaluating the Costs and Benefits of Appliance Efficiency Standards," with P. Joskow, MIT Energy Lab Working Paper, MIT-EL82005WP; American Economic Review, 72, 1982.
- "Information Costs, Competition and Collective Ratemaking in the Motor Carrier Industry," presented at Conference On Consensual Decision Making, American University, August 1982; American University Law Review, 1983.
- "An Overview of IFFS," presented at EIA-NBS Conference on Energy Models, August 1982; in Intermediate Future Forecasting System, ed. S. Gass et al., Washington: 1983.
- "Choice of Conservation Actions in the AHS," November 1982; in Energy Simulation Models, ed. R. Crow, 1983.
- "Patents and R&D: Searching for a Lag Structure," with B. Hall and Z. Griliches, in Actes du Colloque Econometrie de la Recherche, Paris: 1983.
- "The Demand for Optional Local Measured Telephone Service," in Adjusting to Regulatory, Pricing and Marketing Realities, East Lansing: 1983.
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- "Price Discrimination and Patent Policy," with J. MacKie-Mason, Rand Journal of Economics, 1988.
- "Residential End-Use Load Shape Estimation from Whole-House Metered Data," IEEE Transactions on Power Systems, 1988 (with I. Schick, P. Voro, and M. Ruane).
- "Competition in Telecommunications for Large Users in New York," with H. Ware and T. Tardiff, Telecommunications in a Competitive Environment, 1989.
- "Innovation and International Trade Policy," Oxford Review of Economic Policy, 1988 (with J. MacKie-Mason).
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- "Future Competition in Telecommunications," 1987; ed. S. Bradley and J. Hausman, Future Competition in Telecommunications, 1989.
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- "An Ordered Probit Model of Intra-day Securities Trading," with A. Lo and C. MacKinlay, Journal of Financial Economics, 1992.
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- "Global Competition and Telecommunications," in Bradley, et al., ed., Globalization, Technology and Competition, 1993.
- "The Bell Operating Companies and AT&T Venture Abroad and British Telecom and Others Come to the US," presented at Harvard Business Conference on International Telecommunications, 1991, in Bradley, et al., ed., Globalization, Technology and Competition, 1993.
- "The Effects of the Breakup of AT&T on Telephone Penetration in the US," with T. Tardiff and A. Belinfante, American Economic Review, 1993.
- "Competitive Analysis with Differentiated Products," with G. Leonard and D. Zona, Annales, D'Economie et de Statistique, 34, 1994.
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- "The Effect of Superstars in the NBA: Economic Value and Policy," with G. Leonard, revised May 1996.
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- "Competition in Long Distance and Equipment Markets: Effects of the MFJ," 1994, Journal of Managerial and Decision Economics, 1995.
- "The Cost of Cellular Telephone Regulation," MIT Working Paper, January 1995.
- "State Regulation of Cellular Prices," Wireless Communications Forum, Volume III, April 1995.
- "Efficient Local Exchange Competition," with T. Tardiff, Antitrust Bulletin, 1995.
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- "Project Independence: An Economic Analysis," Technology Review, May 1974.
- "The FEA's Project Independence Report: Testimony before Joint Economic Committee," U.S. Congress, March 18, 1975.
- "The FEA's Project Independence Report: An Analytical Assessment and Evaluation," NSF Report, June 1975.
- "Energy Demand in the ERDA Plan," with D. Wood, Energy Laboratory Report, August 1975.
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- "Labor Supply Response of Males to a Negative Income Tax," Testimony for U.S. Senate Finance Subcommittee on Public Assistance, November 22, 1978.
- "Appliance Choice with Time of Day Pricing," Energy Laboratory Report, January 1980.
- "Discrete Choice Models with Uncertain Attributes," Oak Ridge National Laboratories Report, January 1980.
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- "Wealth Accumulation and Retirement," with P. Diamond, Report to the Department of Labor, May 1982.
"A Review of IFFS," Report to the Energy Information Agency, February 1982.
- "A Model of Heating System and Appliance Choice," with J. Berkovec and J. Rust, Report to the Department of Energy, December 1983.
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- "Competition in the Information Market 1990", August 1990.
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- "Statement on the Natural Resource Damage Provisions of CERCLA," Testimony before the U.S. Senate Committee on Environment and Public Works, May 11, 1995; Testimony before the U.S. House of Representatives, Transportation & Infrastructure Committee, Water Resources & Environment Subcommittee, July 11, 1995.
- "Competition in Cellular Markets," Testimony before the U.S. House of Representatives, Committee on Commerce, October 12, 1995.

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The Choice and Utilization of Energy Using Durables, ed. J. Hausman, Palo Alto: EPRI, 1981.

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**CONTOUR PROTECTION MAPS OF CHANNELS 60-69
UNDER THE FCC'S AND BROADCASTERS' APPROACHES**

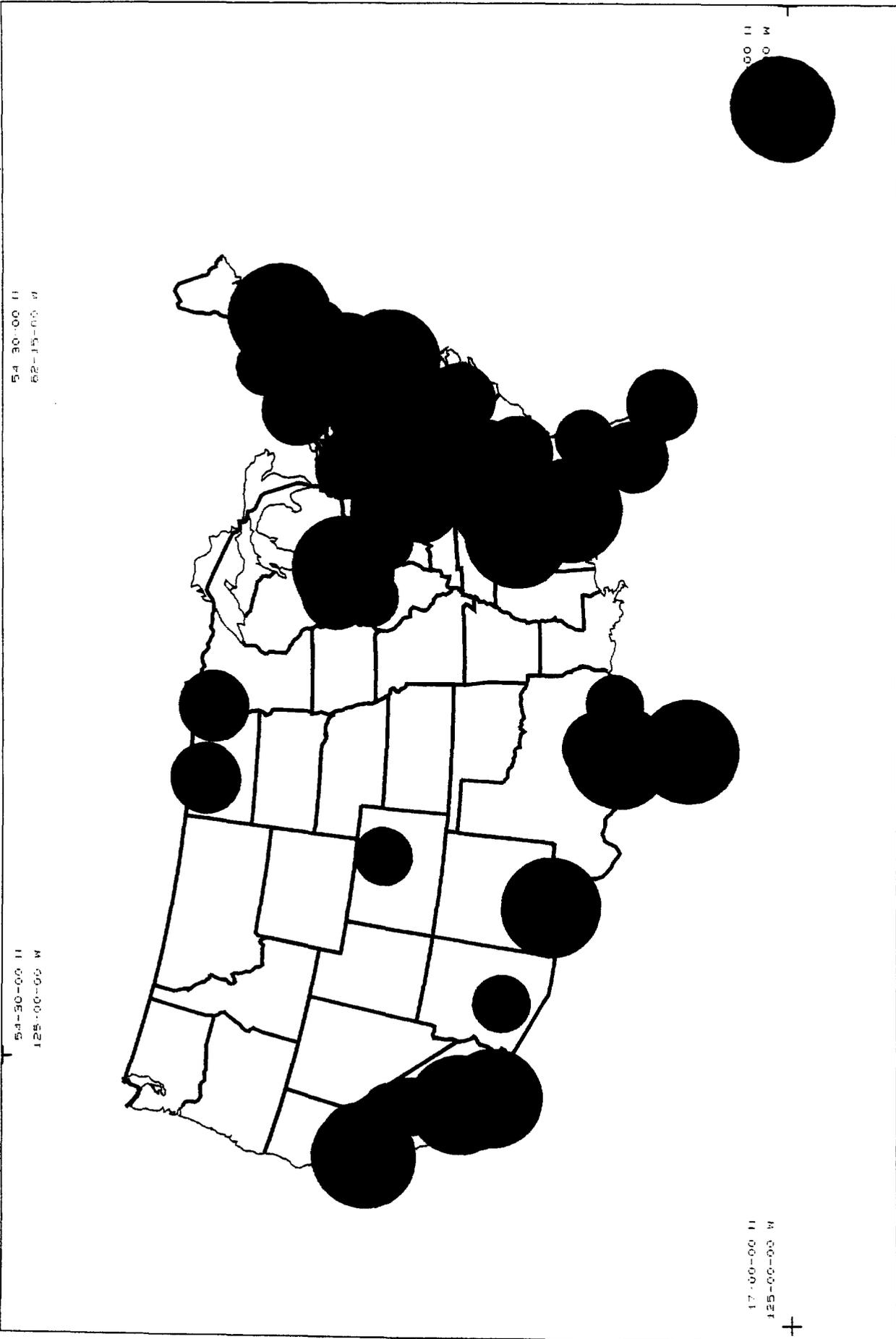
The attached maps illustrate the location of NTSC and DTV channel assignments in the channel 60-69 range under both the Broadcasters' approach (embodied in the Modified Table) and the FCC's approach (embodied in the Baseline Table derived from the FCC DTV Table, as discussed in Part III of the Joint Comments).

The first 20 maps illustrate the amount of spectrum (in white) that would be available for auction in 6 MHz blocks in each of channels 60-69 under the Broadcasters' and FCC approaches. By contrast, the blue and red areas represent spectrum that could not be auctioned because it is needed to transmit or protect DTV (blue) and NTSC (red) signals. The NTSC contour protection maps were derived using the FCC rules (47 C.F.R. 90.300, Subpart L). The DTV contour protection maps were derived using the criteria in the Notice, at ¶ 75.

The second 8 maps use the same color schemes to illustrate the spectrum availability in channels 60-69, aggregated into larger spectrum blocks. Thus, the maps illustrate the availability of spectrum for auction under the Broadcasters' and FCC approaches in channels 60-62 (18 MHz), 63-65 (18 MHz), 65-69 (30 MHz), and 66-69 (24 MHz).

These maps show that the Broadcasters' approach, although it would assign more DTV channels to channels 60-69, would impact the availability of spectrum in this band little more than would the FCC approach. However, because neither approach would free up a significant amount of spectrum in the major markets during the transition period, we propose that there be no auction of broadcast spectrum until the transition to DTV is completed. Then the spectrum can be cleared of broadcast stations and auctioned for a far better return, as the preceding economist's report indicates.

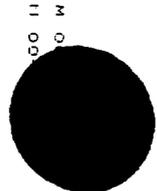
BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 60



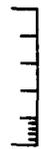
54 30-00 H
62-15-00 W

54-30-00 H
125-00-00 W

17-00-00 H
125-00-00 W

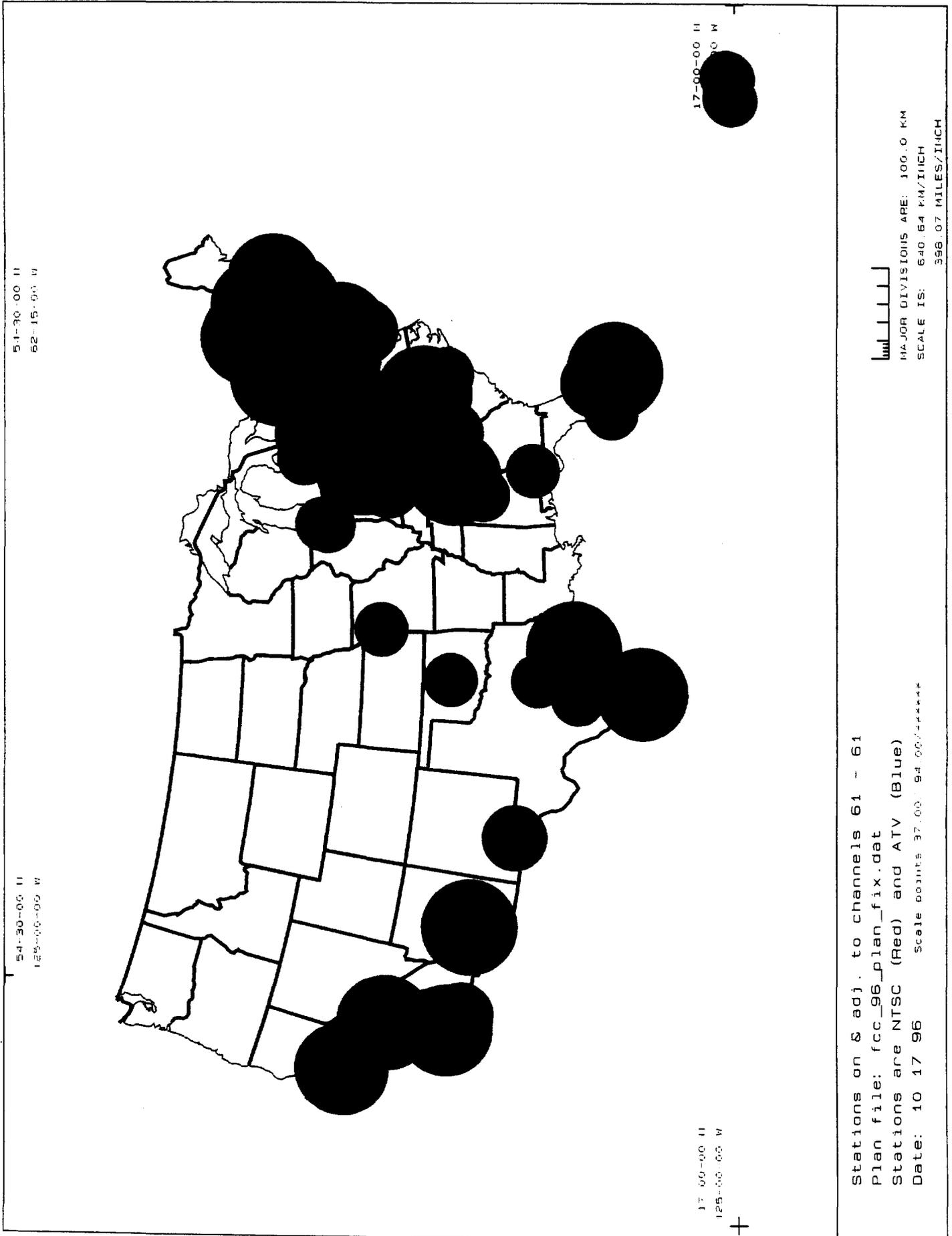


Stations on & adj. to channels 60 - 60
Plan file: fcc_96_plan_fix.dat
Stations are NTSC (Red) and ATV (Blue)
Date: 10 17 96 Scale points 37.00/ 94.00:-----



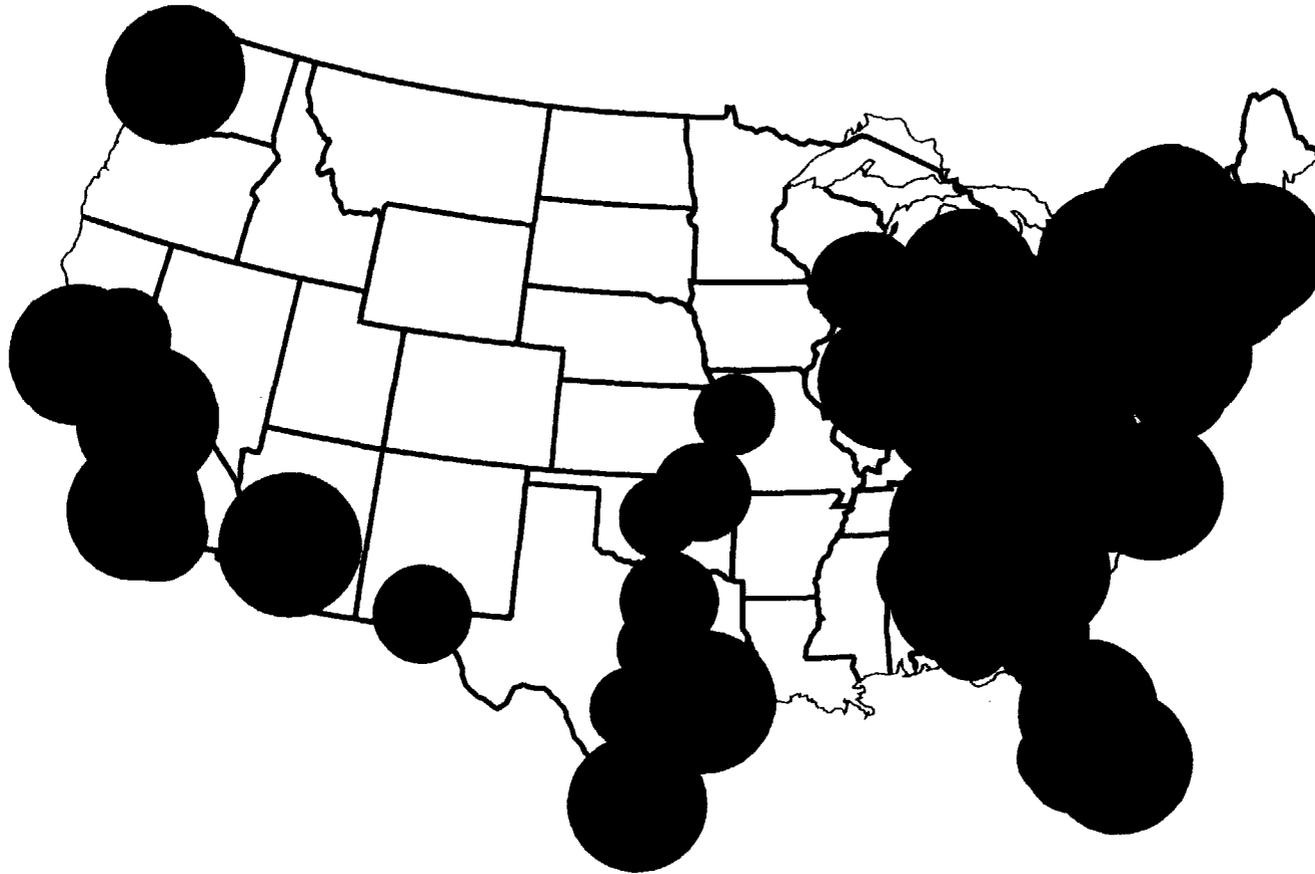
MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
399.07 MILES/INCH

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 61



54-30-00 N
125-00-00 W

54-30-00 N
62 15 00 W



17-00-00 N
125-00-00 W

17-00-00 N
62 15 00 W

Stations on & adj. to channels 61 - 61

Plan file: plan_100996.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

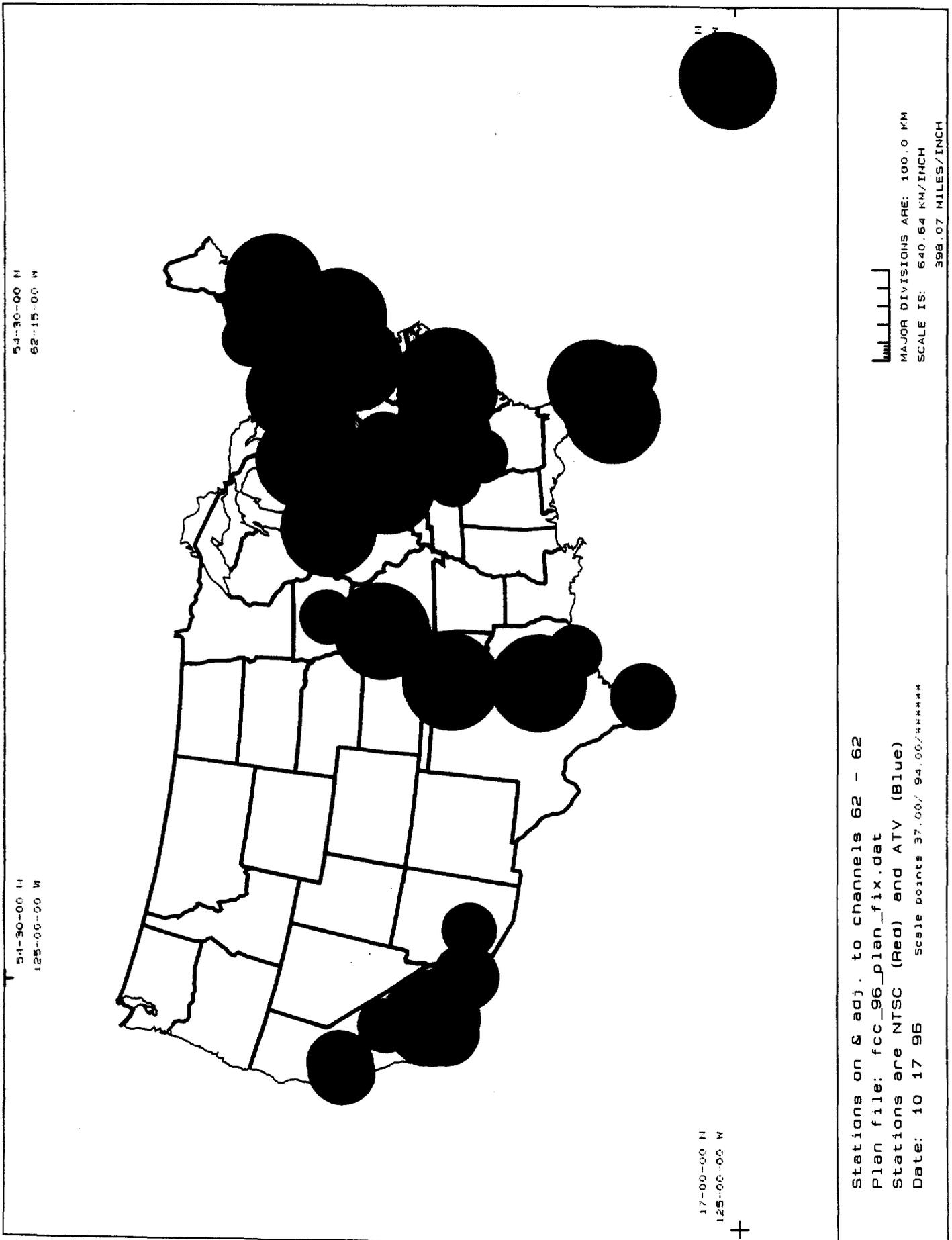
Scale points 37.00 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
398.07 MILES/INCH

BROADCASTERS' MODIFIED TABLE --
CHANNEL 61

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 62

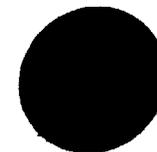


54-30-00 H
125-00-00 W

54-30-00 H
62-15-00 W



17-00-00 H
125-00-00 W



Stations on & adj. to channels 62 - 62

Plan file: plan_100996.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****

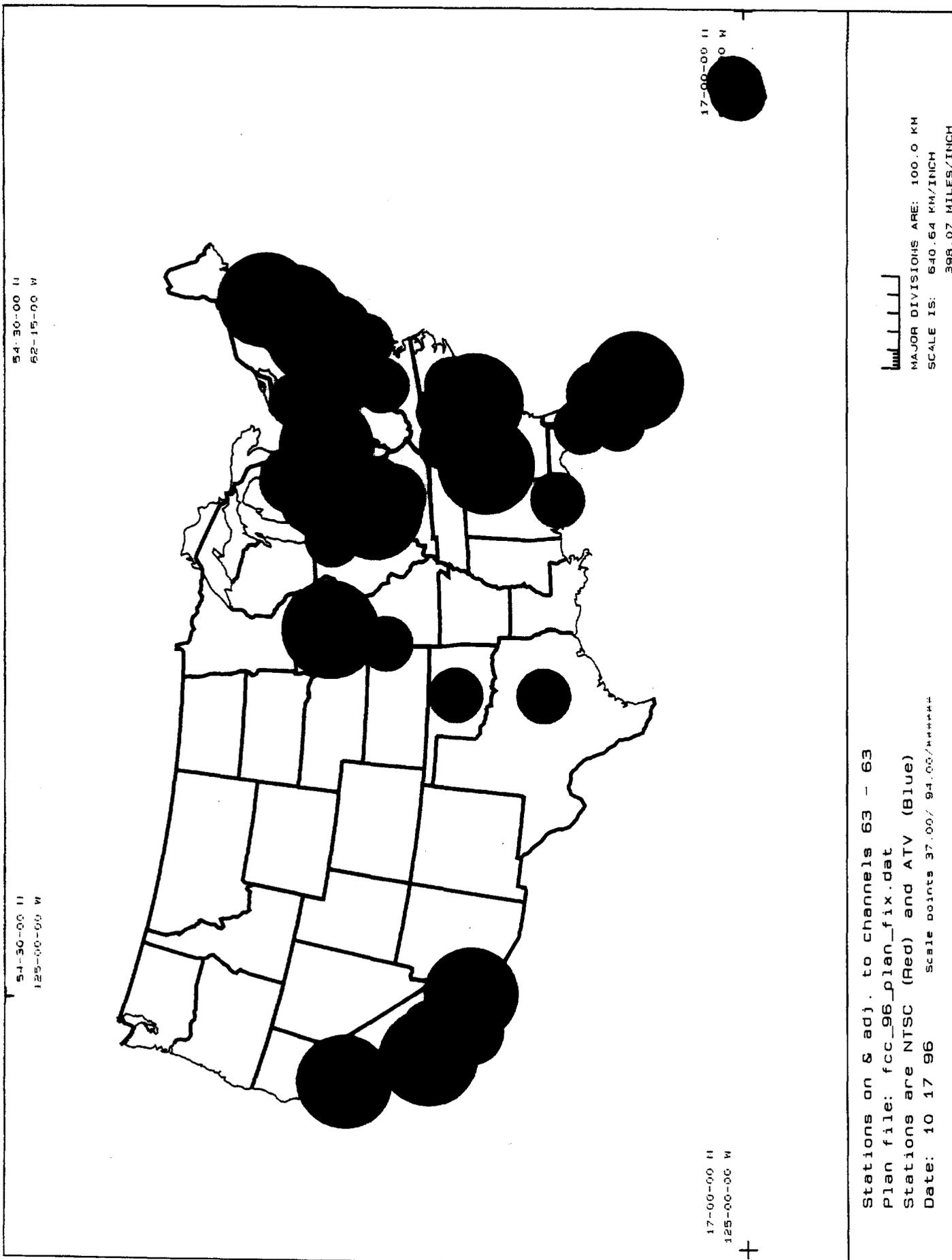


MAJOR DIVISIONS ARE: 100.0 KM

SCALE IS: 640.64 KM/INCH

398.07 MILES/INCH

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 63



54-30-00 N
125-00-00 W

54-30-00 N
62-15-00 W



17-00-00 N
125-00-00 W

17-00-00 N
00 00 W

Stations on & adj. to channels 63 - 63

Plan file: plan_100996.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM

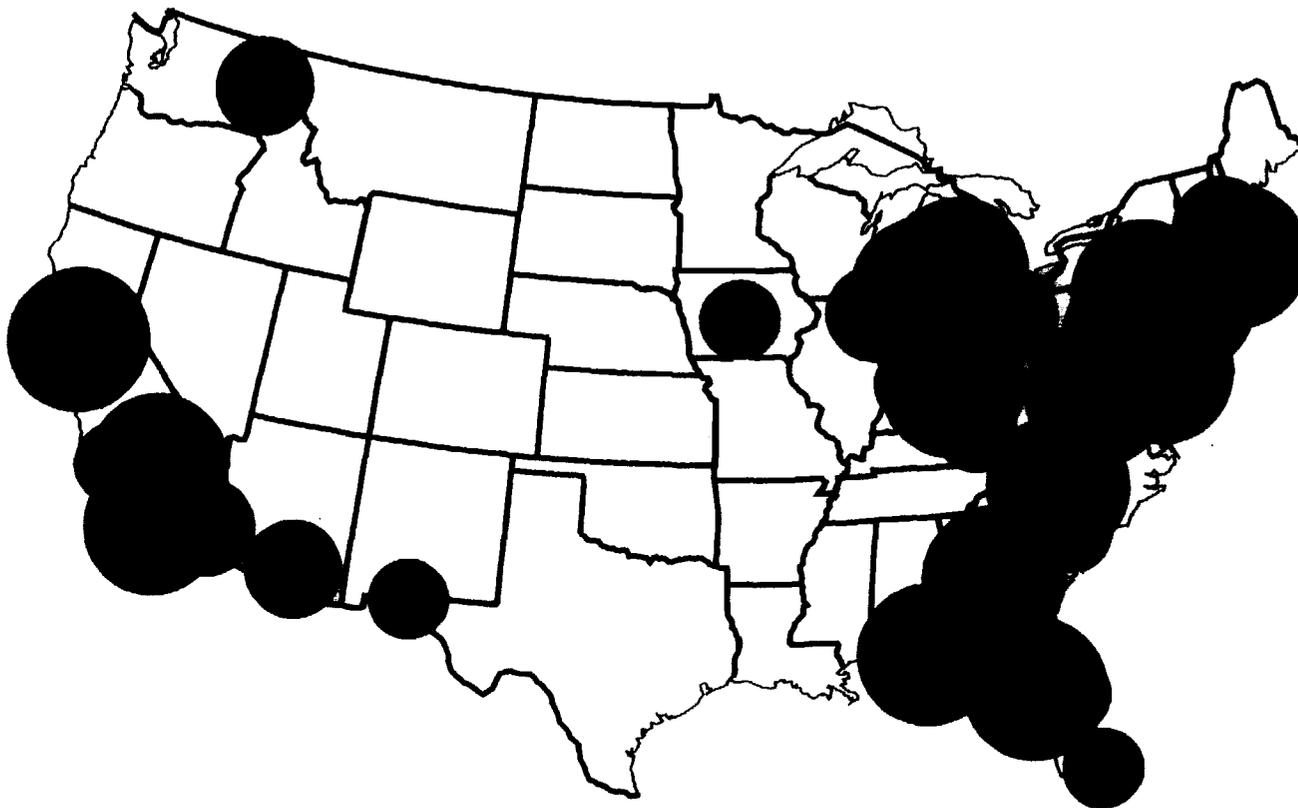
SCALE IS: 640.64 KM/INCH

398.07 MILES/INCH

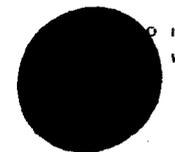
BROADCASTERS' MODIFIED TABLE --
CHANNEL 63

54-30-00 H
125-00-00 W

54-30-00 H
62-15-00 W



17-00-00 H
125-00-00 W



Stations on & adj. to channels 64 - 64

Plan file: fcc_96_plan_fix.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****



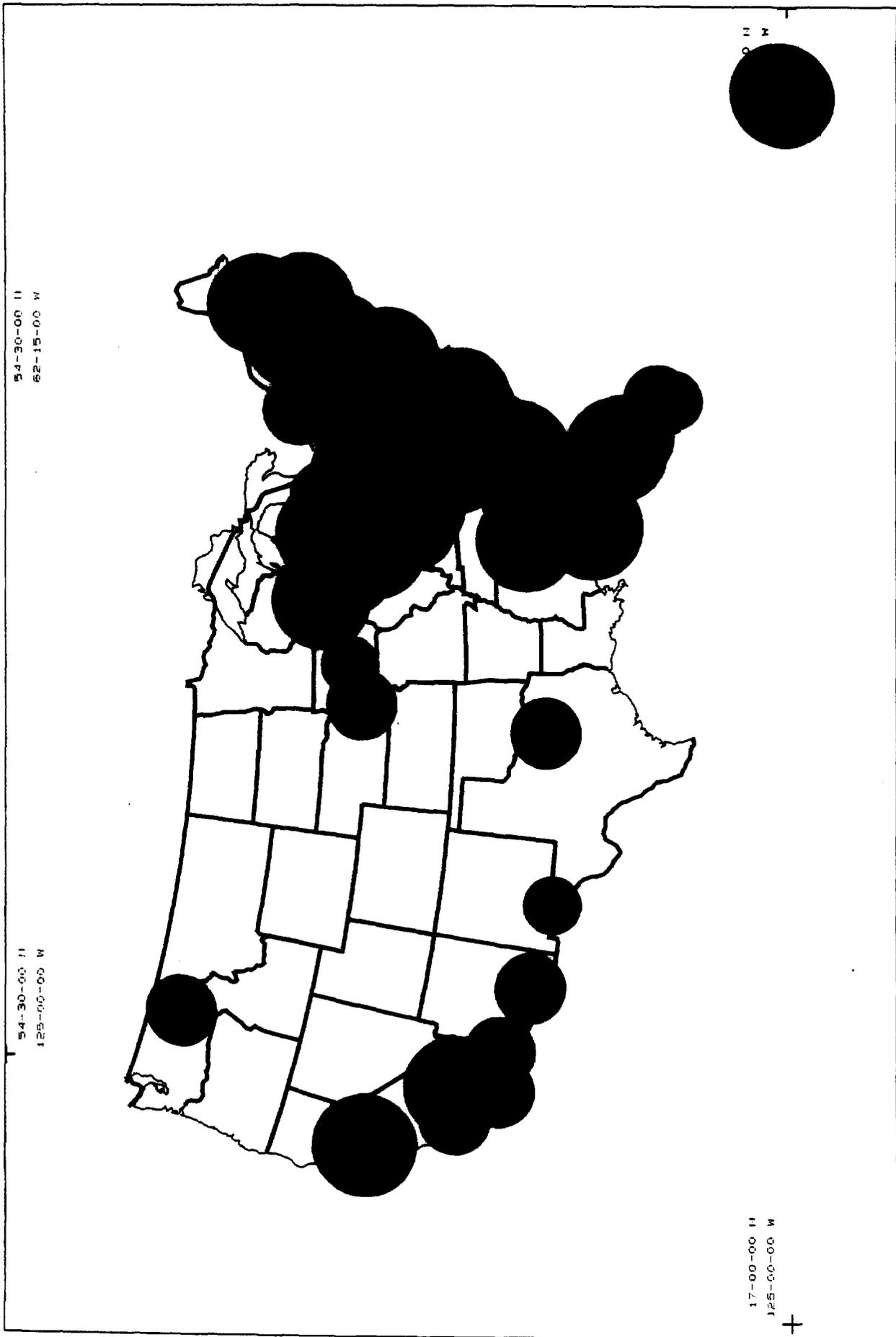
MAJOR DIVISIONS ARE: 100.0 KM

SCALE IS: 640.64 KM/INCH

398.07 MILES/INCH

BASILINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 64

BROADCASTERS' MODIFIED TABLE --
CHANNEL 64



54-30-00 N
62-15-00 W

54-30-00 N
125-00-00 W

17-00-00 N
125-00-00 W

Stations on & adj. to channels 64 - 64
Plan file: plan_100996.dat
Stations are NTSC (Red) and ATV (Blue)
Date: 10 17 96 Scale points 37.00/ 94.00/*****

MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
399.07 MILES/INCH

54-30-00 N
125-00-00 W

54-30-00 N
62-15-00 W



17-00-00 N
125-00-00 W

17-00-00 N
00 W

Stations on & adj. to channels 65 - 65

Plan file: fcc_96_plan_fix.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
398.07 MILES/INCH

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 65

54-30-00 N
125-00-00 W

54-30-00 N
62-15-00 W



17-00-00 N
125-00 00 W

17-00-00 N
00 W

Stations on & adj. to channels 65 - 65

Plan file: plan_100996.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

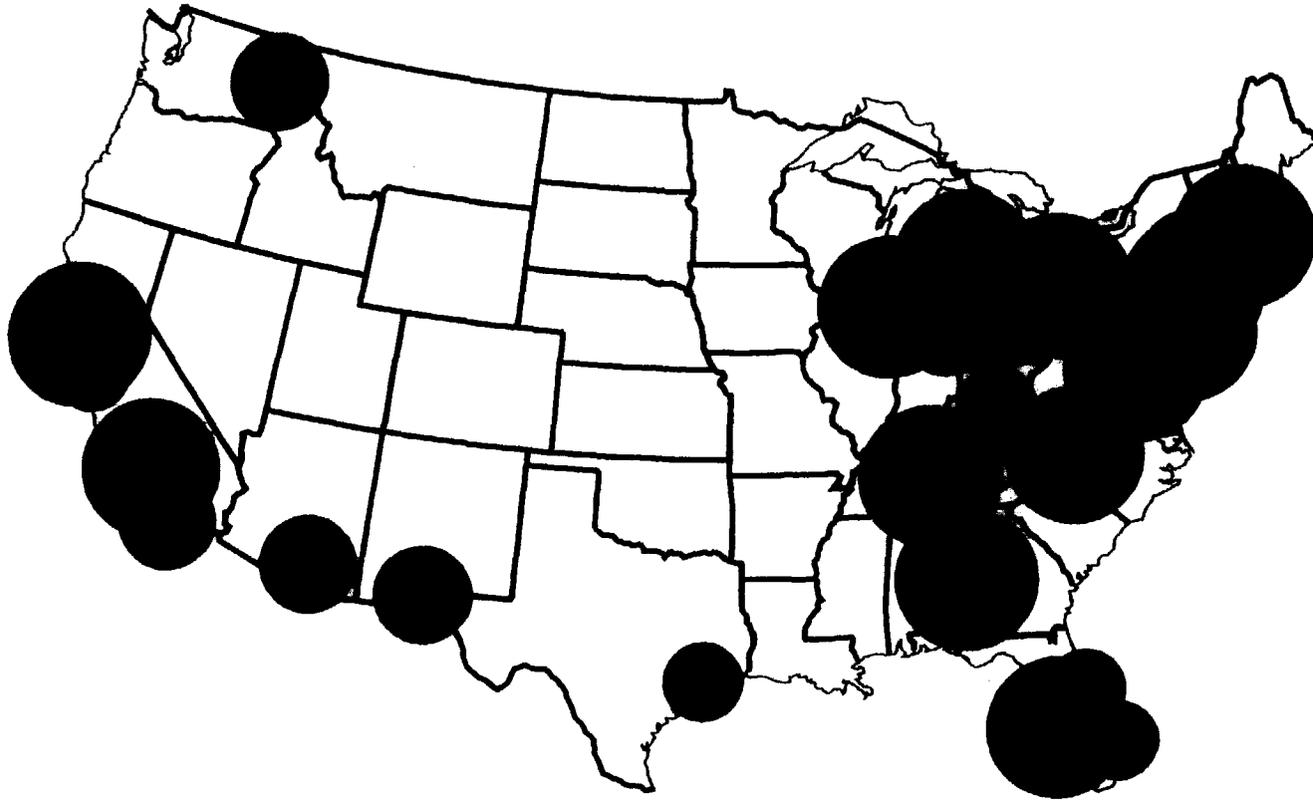
Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
398.07 MILES/INCH

54-30-00 H
125-00-00 W

54-30-00 H
62-15-00 W



17-00-00 H
125-00-00 W

17-00-00 H
62-15-00 W

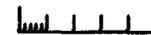
Stations on & adj. to channels 66 - 66

Plan file: fcc_96_plan_fix.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM

SCALE IS: 640.64 KM/INCH

398.07 MILES/INCH

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 66

54-30-00 H
125-00-00 W

54-30-00 H
62-15-00 W



17-00-00 H
125-00-00 W

17-00-00 H
62-15-00 W

+

Stations on & adj. to channels 66 - 66

Plan file: plan_100996.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM

SCALE IS: 640.64 KM/INCH

398.07 MILES/INCH

BROADCASTERS' MODIFIED TABLE --
CHANNEL 66

54-30-00 N
125-00-00 W

54-30-00 N
62-15-00 W



17-00-00 N
125-00-00 W

17-00-00 N
62-15-00 W

+

Stations on & adj. to channels 67 - 67
Plan file: fcc_96_plan_fix.dat
Stations are NTSC (Red) and ATV (Blue)
Date: 10 17 96

Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
395.07 MILES/INCH

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 67

54-30-00 N
125-00-00 W

54-30-00 N
62-15-00 W



17-00-00 N
125-00-00 W

17-00-00 N
62-15-00 W

Stations on & adj. to channels 67 - 67

Plan file: plan_100996.dat

Stations are NTSC (Red) and ATV (Blue)

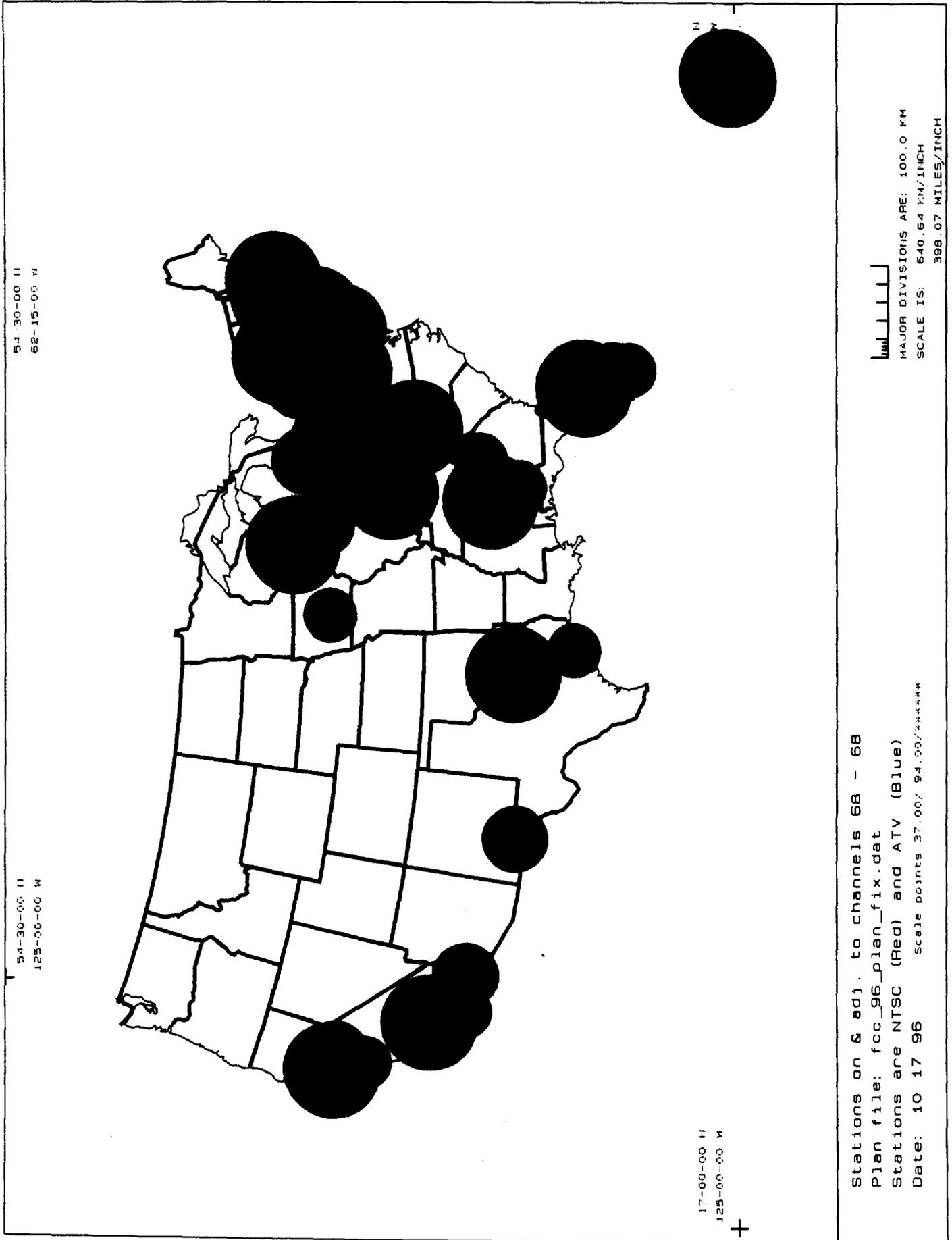
Date: 10 17 96

Scale points 37.00, 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
398.07 MILES/INCH

BASELINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 68



54-30-00 N
62-15-00 W

17-00-00 N
125-00-00 W

17-00-00 N
125-00-00 W



MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
399.07 MILES/INCH

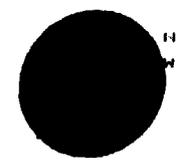
Stations on & adj. to channels 68 - 68
Plan file: fcc_96_plan_fix.dat
Stations are NTSC (Red) and ATV (Blue)
Date: 10 17 96 Scale points 37.00/ 94.00/*****

54-30-00 N
125-00-00 W

54-30-00 N
62-15-00 W



17-00-00 N
125-00-00 W



Stations on & adj. to channels 68 - 68
Plan file: plan_100996.dat
Stations are NTSC (Red) and ATV (Blue)
Date: 10 17 96 Scale points 37.00/ 94.00/*****

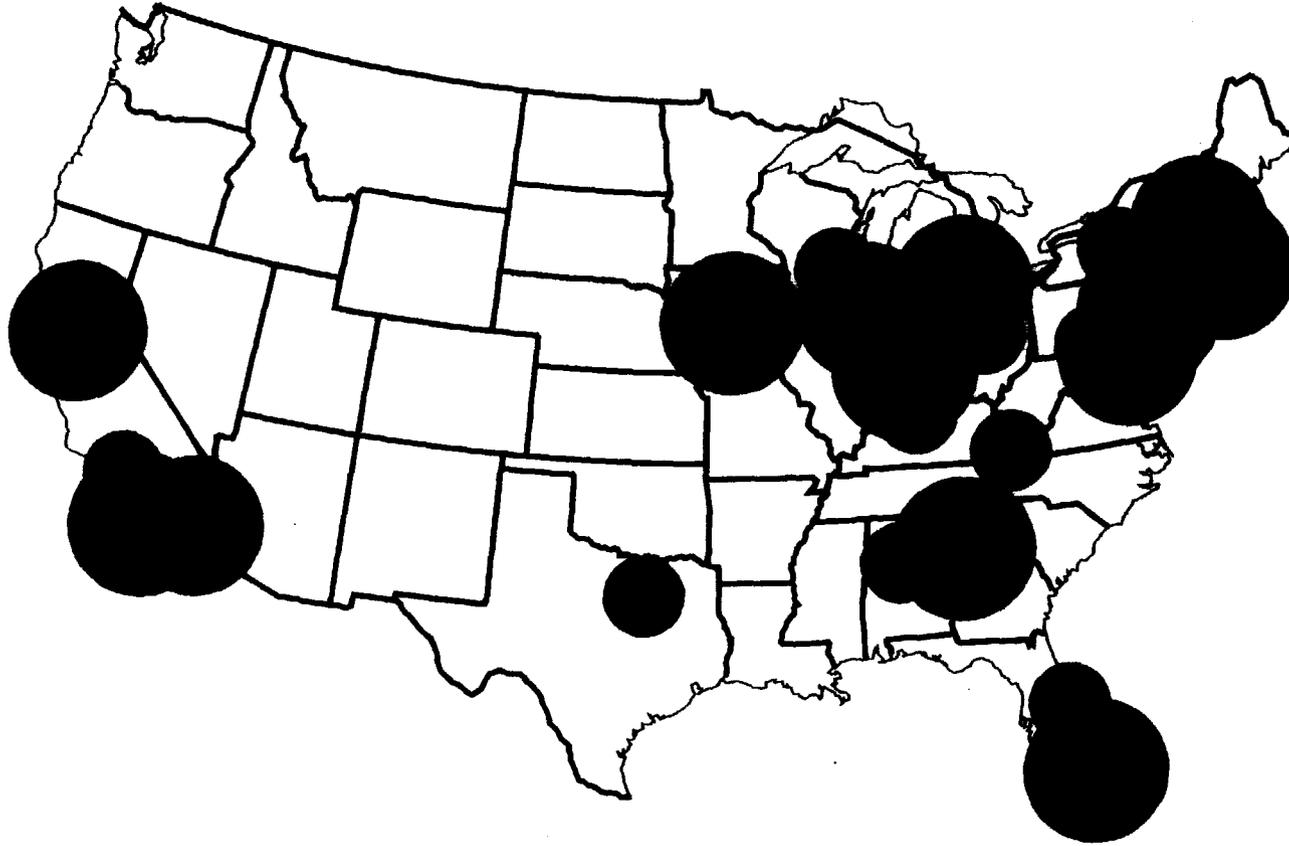


MAJOR DIVISIONS ARE: 100.0 KM
SCALE IS: 640.64 KM/INCH
398.07 MILES/INCH

BROADCASTERS' MODIFIED TABLE --
CHANNEL 68

54-30-00 H
125-00-00 W

54-30-00 H
62-15-00 W



17-00-00 H
125-00-00 W

17-00-00 H
62-15-00 W

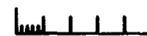
Stations on & adj. to channels 69 - 69

Plan file: fcc_96_plan_fix.dat

Stations are NTSC (Red) and ATV (Blue)

Date: 10 17 96

Scale points 37.00/ 94.00/*****



MAJOR DIVISIONS ARE: 100.0 KM

SCALE IS: 640.64 KM/INCH

398.07 MILES/INCH

BASILINE TABLE (CORRECTED FCC
DTV TABLE) -- CHANNEL 69