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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
LONG ISLAND LIGHTING COMPANY	)	Docket No. 50-322-OL-3
	)	(Emergency Planning)
(Shoreham Nuclear Power Station, Unit 1)	)	(Emergency Broadcast System)
	)	

TESTIMONY OF DOUGLAS CROCKER, RALPH E. DIPPELL AND WILLIAM G. JOHNSON ON THE REMANDED ISSUE OF THE COVERAGE OF LILCO's EMERGENCY BROADCAST SYSTEM

HUNTON & WILLIAMS
707 East Main Street
Richmond, Virginia 23219

April 13, 1988

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IDENTITY AND QUALIFICATIONS OF WITNESSES

1. Q. Please state your name, position and business address, and summarize your qualifications.

A. [Crocker] My name is Douglas Crocker. I am Manager of Nuclear Emergency Preparedness for Long Island Lighting Company (LILCO). My business address is 131 Hoffman Lane, Central Islip, New York 11722. A summary of my qualifications appears as Attachment A to this testimony.

[Dippell] My name is Ralph E. Dippell. I am a principal in the firm of Cohen and Dippell, P.C. My business address is 1015 15th Street, N.W., Suite 703, Washington, D.C. 20005. A summary of my professional qualifications appears as Attachment B to this testimony.

[Johnson] My name is William G. Johnson. I am President of Campaign Research, Inc. and Bill Johnson & Associates, Inc. My business address is 559 Gramatan Avenue, Mt. Vernon, New York 10552. A summary of my professional qualifications appears as Attachment C to this testimony.

SCOPE OF TESTIMONY

2. Q. Please describe the scope of this testimony.

A. [Crocker] This testimony addresses the contentions filed by the intervenors in this remanded proceeding concerning LILCO's EBS system, insofar as they were admitted by the Licensing Board in its ruling dated February 24, 1988, ASLBP No. 88-561-02-OLR.

THE LILCO EMERGENCY BROADCAST SYSTEM (EBS)

3. Q. Please describe the emergency broadcast system for Shoreham contained in the LILCO emergency plan, Revision 9.

A. [Crocker] The EBS consists of seven AM radio stations and three FM stations. Seven stations -- WRCN-FM (Riverhed), WLNG-FM (Sag Harbor), WLIM(AM) (Patchogue), WRHD(AM) (Riverhead), WRIV(AM) (Riverhead), WLNG(AM) (Sag Harbor), and WGLI(AM) (Babylon) -- are on Long Island. The remaining three -- WPLR(FM) (New Haven), WELI(AM) (New Haven), and WICC(AM) (Bridgeport) -- are Connecticut stations. The seven Long Island stations were members of the previous EBS that was litigated and found acceptable by the Licensing Board. LBP-85-12, 21 NRC 644, 763-64 (1985) (PID). The three Connecticut stations are new members of the EBS for Shoreham. Together, these ten stations provide coverage of the entire EPZ and most of Long Island.

LILCO has entered into an agreement with WPLR(FM) to act as the trigger station in the Shoreham EBS. A copy of the agreement appears in the Plan at App. B-83 (Rev. 9). WPLR, located in New Haven, Connecticut, broadcasts at a power level of 14.1 kilowatts twenty-four hours a day, seven days a week, on an assigned frequency of 99.1 on the FM band. WPLR's coverage area includes the entire 10-mile EPZ around Shoreham. During a Shoreham emergency, WPLR would activate its tone generator, which would automatically alert the nine other participating radio stations in Connecticut and on Long Island, in a manner similar to

the EBS system previously found acceptble. See PID at 763-64, Clawson et al., ff. Tr. 5254, at 4. WPLR would then broadcast EBS messages over its own frequency throughout the EPZ. Each of the other nine stations would be able, in turn, to either rebroadcast simultaneously the EBS messages received from WPLR or to tape the messages for later rebroadcast. WPLR's signal would also alert the special facilities and large employers to whom LILCO has distributed tone alert radios. See PID at 759-60.

The two additional stations that have agreed to participate in the EBS since the prior revision of the Plan (Rev. 8) are WICC(AM) in Bridgeport, Connecticut and WELI(AM) in New Haven, Connecticut. A copy of the agreement with WICC appears in the Plan at App. B-84 (Rev. 9), and a copy of the agreement with WELI appears in the Plan at App. B-85 (Rev. 9). WICC broadcasts 24 hours a day, at a power level of 1 kw during daytime hours and 5 kw during nighttime hours. WELI broadcasts 24 hours a day at a power level of 5 kw.

COVERAGE OF LILCO's EBS

4. Q. Can WPLR-FM function as an effective and adequate primary EBS station for transmission of EBS messages and activation of tone alert radios throughout the EPZ?

A. [Crocker, Dippell] Yes. WPLR is capable of transmitting, and does transmit, a measured signal of sufficient strength (over 1000 microvolts per meter) to transmit radio messages throughout the entire 10-mile Emergency Planning Zone (EPZ) around the Shoreham plant. The signal from WPLR can easily activate the tone alert radios within the EPZ. The

tone alert radios at schools, hospitals and other facilities in the EPZ are Emergency Alert Receiver, Inc. (EAR) units, with a receiver sensitivity of 3 microvolts per meter, well below the signal strength of WPLR throughout the EPZ.

5. Q. Is WPLR's broadcast signal too weak to convey a strong and clear message throughout the EPZ?

A. [Crocker, Dippell] No. WPLR's broadcast signal is of sufficient strength to convey a strong and clear message throughout the EPZ.

6. Q. What is the basis for that conclusion?

A. [Crocker] I directed Cohen and Dippell to make a determination as to the signal strength of WPLR.

[Dippell] Cohen and Dippell researched and analyzed documents in the official files of the Federal Communications Commission (FCC), and also conducted extensive field tests in central Suffolk County, New York, with specific emphasis on the EPZ to determine the broadcast signal strength of WPLR.

The field tests were conducted utilizing both FCC procedures (radial and grid methods) and in accordance with 47 C.F.R. § 73.314 of the FCC rules. In addition to the field strength measurements, WPLR was monitored and recorded on a Sony receiver, FM/AM stereo cassette-corder. The methodology and procedures used in conducting the field and listening tests are explained in detail in the attached Engineering Report entitled: Engineering Report Re Field Strength Measurement Survey of Radio Stations, WEZN(FM), Bridgeport, Connecticut, WPLR(FM), New

Haven, Connecticut for Long Island Lighting Company, June 1987 (Attachment D to this testimony). The Report was prepared by Cohen and Dippell under my direction and supervision. The contents of the Report are true and accurate to the best of my knowledge, information and belief.

Based on the results of this analysis, WPLR provides a signal level of at least 1 millivolt (1000 microvolts) per meter (60 dBu), as provided in the FCC rules, to the entire EPZ utilizing either FCC method for conducting field strength measurements. Additionally, listening tests and recorded audio cassettes of the WPLR broadcast, made during the Cohen and Dippell field survey, demonstrate that WPLR provides a strong, clear, listenable signal throughout the EPZ.

7. Q. Does the geography of Long Island, combined with the location of WPLR's transmitters, prevent the transmission of clear broadcast messages throughout the EPZ?

A. [Crocker, Dippell] No.

[Dippell] The clearest evidence of this is the field tests conducted by personnel in my firm, under my direction and supervision. Actual field measurements of signal strength, of course, take into account the effects of geography and transmitter location. As set forth in Attachment D, the field tests showed that WPLR provides the FCC recognized signal level of 1 millivolt per meter (60 dBu) to the entire EPZ.

8. Q. Does WPLR provide capability to issue warning messages on a 24-hour basis?

A. [Crocker, Dippell] Yes. WPLR is licensed to broadcast on a 24-hour basis, whether or not under emergency conditions.

[Dippell] WPLR is a class B FM Broadcast station operating on Channel 256 B (99.1 mHz) with maximum facilities permitted for class B FM stations under the FCC rules. In accordance with its broadcast license, WPLR is permitted to operate 24 hours a day with the same signal strength day and night resulting in the same 1 millivolt per meter (60 dBu) coverage day and night, in accordance with FCC rules.

9. Q. Are radio antennas on Long Island typically oriented in a nominal east-west direction?

A. [Crocker, Dippell] We have seen no evidence to that effect.

[Dippell] Based on my years of experience in the radio broadcast industry, particularly in assisting radio stations with their advertising programs, it is my firm belief that directional receiving antennas are seldom used. Radio antennas commonly in use are non-directional, such as car radio antennas, and antennas in radios with self-contained or electric power cord antennas, whose orientation is random. Thus, in my opinion, radio antennas on Long Island are not generally oriented in any particular direction.

10. Q. Please describe the coverage provided by the remaining stations (other than WLPR) in the LILCO EBS system.

A. [Dippell] Field strength measurements were conducted for WELI in accordance with 47 C.F.R. §§ 73.153 and 73.186 of the FCC rules and are

shown in the Cohen and Dippell Engineering Report Re Field Strength Measurement Survey of Radio Station WINS, New York, New York, 1010 KHZ 50 KW DA-1 and WELI, New Haven, Connecticut, 960 KHZ 5 KW DA-N for Long Island Lighting Company, dated June 1987 (Attachment E to this testimony). The Report was prepared by Cohen and Dippell under my direction and supervision. The contents of the Report are true and accurate to the best of my knowledge, information and belief. The measurements were made on three radial directions from the WELI transmitter site: N 162° E, N 172.5° E and N 187° E. Included with the June 1987 report (Exhibit E) is a coverage map showing the measured 0.5 mv/m daytime contour of WELI. This contour was based on the data extracted from the N 187° E radial. The other two radials, N 162° E and N 172.5° E, were measured to the Atlantic Ocean and Moriches Bay respectively. All of this measured data on these radials showed a signal level in excess of 0.5 mv/m, in accordance with FCC rules.

A composite map of computed AM 0.5 mv/m daytime coverage contours and FM 1 mv/m (60 dBu) contours is shown in Figure 1 of the Cohen and Dippell Engineering Report Re Computed [illegible]al Contours for Stations WICC, WELI, WGLI, WRHD, WLIM, WLNG AM [illegible]FM, WPLR(FM) and WRCN-FM, dated September 1987 (Attachment F to [illegible]s testimony). That Report was prepared by Cohen and Dippell under my direction and supervision. The contents of the Report are true and accurate to the best of my knowledge, information and belief. The contours presented on the composite map in Attachment F were taken from the FCC broadcast license files of the respective stations, except for WPLR and WELI. The

contour shown for WPLR is based on Cohen and Dippell's field strength measurements. The contour shown for WELI was based on its computed contour with the exception of the N 187° E direction, which was based on the Cohen and Dippell measured data.

As shown in Attachment F, based on its computed (predicted) contour, WRCN-FM provides coverage of 1 mv/m to approximately 92% of the EPZ. WRCN is located on Long Island, at Riverhead, and is licensed to operate 24 hours a day with full facilities and power.

11. Q. Please describe the AM coverage of the Shoreham EBS, both day and night.

A. [Crocker, Dippell] The Shoreham EBS provides adequate AM coverage of the entire 10-mile EPZ during the day.

[Dippell] The daytime signal contour map contained in the September, 1987 Engineering Report (Attachment F) clearly shows that the participating AM stations, particularly WICC and WELI, cover the entire EPZ during the day. Stations WRHD(AM), WLIM(AM), and WLNG(AM) also provide coverage to portions of the EPZ during the day.

[Crocker] With respect to nighttime AM coverage, WELI broadcasts 24 hours per day, seven days per week with full daytime power. Although the two other AM stations that normally broadcast at night (WICC and WGLI) broadcast at lower power levels at night, the agreements that WICC and WGLI have signed indicate that each, consistent with its license and FCC regulations, is permitted to broadcast at any time at full daytime

power in response to emergency conditions. See LILCO Plan (Rev. 9), App. B-84, B-58. Similarly, the AM stations that were part of the previous Shoreham EBS and have reaffirmed their earlier agreements are similarly permitted, under FCC regulations, to use their full daytime facilities and power levels during nighttime hours to broadcast emergency information in response to emergency conditions. See Clawson et al., ff. Tr. 5254, at 9; 47 C.F.R. § 73.1250(f). The Licensing Board previously relied upon such agreements -- and FCC regulations permitting daytime AM stations to use their full daytime facilities and power levels to broadcast emergency information at night -- in approving the previous Shoreham EBS. PID at 764.

[Dippell] The AM nighttime coverage contour shown for WELI on the map contained in the Engineering Report dated September 1987 (Attachment F) is based on daytime measurements and incorporates the WELI nighttime directional pattern. No other nighttime coverages were shown since they could not be found in the respective stations' license files. It is my opinion, however, that WICC provides nighttime interference free service to parts of the EPZ, based on its transmitter location and the ground propagation between the WICC transmitter and the EPZ. We did not attempt, however, to compute any other nighttime coverage contours employing the assumption that the various AM stations were permitted to broadcast at night at full authorized daytime limits in an emergency.

[Crocker] Such additional computations were considered unnecessary, since WPLR provides full FM coverage to the entire EPZ at night.

12. Q. Have you reviewed any data generated by Moffett, Larson & Johnson, Inc., consultants for the Intervenors, concerning potential gaps in AM coverage of the Shoreham EBS at night?

A. [Dippell] Yes. I have reviewed preliminarily certain documents produced under cover of a letter dated April 6, 1988, to K. Dennis Sisk (Hunton & Williams) from Michael J. Missal (Kirkpatrick & Lockhart), which were apparently prepared by Moffett, Larson & Johnson.

13. Q. Were the data in those documents generated in accordance with FCC prescribed methods?

A. [Dippell] No. The procedures used by Moffett, Larson & Johnson for conducting the AM field strength measurement tests reflected in the documents were not in accordance with FCC rules, specifically 47 C.F.R. §§ 73.153 and 73.186. Under those rules, none of that data would be admissible in an FCC proceeding.

Moffett, Larson & Johnson used a grid system for the AM measurement locations. A grid system is permitted by the FCC rules, 47 C.F.R. § 73.314, for FM measurements but not for AM measurements. Section 73.186 of the FCC rules clearly specifies the manner in which AM measurements should be made and analyzed. All AM measurements must be made on radials at specified intervals starting at the AM antenna. The Moffet, Larson & Johnson documents state that "radials were established . . . [for] WICC, WELI and WLIM" (Engineering Statement Regarding

Field Strength Measurements of Radio Stations at 3), but their maps of measurement locations indicate that many measurements were actually taken far off of the "radial." No analysis of measurements was made as required by § 73.186(2) and (3).

14. Q. If there were any gaps in AM coverage of the EPZ at night by the Shoreham EBS, would that be significant?

A. [Crocker] No. At my direction, Mr. William G. Johnson conducted a survey designed primarily to determine whether residents of the EPZ own AM/FM or FM-only radios.

[Johnson] A telephone survey of 600 households in the Shoreham EPZ was conducted under my direction and supervision. A copy of the results of the survey is attached to this testimony as Attachment G. The contents of Attachment G are true and accurate to the best of my knowledge, information and belief. The methodology for the survey is set forth in Attachment G. The sample of households used in the survey was randomly selected and provides a statistically valid basis for determining the percentage of households within the EPZ who own FM radios, within the margin of error and confidence level set forth in Attachment G. The survey shows that 98% of EPZ households own radios in their homes, with an average of 3.3 radios per household. Of these households with radios, 99% (or 97% of all EPZ households) have at least one FM radio in their homes. Thus, only about 3% of EPZ households would not have an FM radio in their homes. As shown on Attachment H, however, of those households without an FM radio in their homes (about 3% of the total), 58% have an FM radio in one or more automobiles. Thus, less than 1.5% of EPZ

households might be unable to receive emergency information in their homes or automobiles from a participating FM EBS station.

Attachment H was prepared under my direction, based on the original survey results; its contents are true and accurate to the best of my knowledge, information and belief.

15. Q. Is the number of people who do not own a radio or do not have an FM radio significant?

A. [Crocker, Johnson] No. Based on the survey, the number of houeholds who do not have an FM radio in their home or automobile is less than 1.5% of the households within the EPZ. Thus the number of people who may not be able to listen to WPLR(FM) is small.

[Crocker] The significance of his number is further reduced by other factors. The EPZ is virtually covered by 89 sirens. These are operated to tell people to turn on their EBS radio. People who do not have an FM radio or any radio at can seek out a neighbor who does have a radio when they hear the sirens. Furthermore, LILCO will distribute in the EPZ annually a brochure, posters, and similar material that will inform residents and transients of the function of the sirens, provide direction concerning EBS, and identify the participating radio stations. The brochure will make people aware that a radio would be their prime source of emergency information in the event of a Shoreham emergency; this will permit them to make arrangements for a radio, if they do not already have one.

16. Q. Does the EBS for Shoreham, as set forth in Revision 9 of the LILCO Plan, comply with applicable regulatory requirements?

A. [Crocker] Yes. The Shoreham EBS satisfies the requirements of 10 C.F.R. § 50.47(b)(5) and (6), and Appendix E § IV.D.3, and is in accordance with the guidance of NUREG-0654, Supp. 1, § II. E.5 and 6 and Appendix 3, and FEMA REP-10. The EBS provides a means of alerting and providing prompt instructions to the public within the plume exposure pathway EPZ, by means of commercial broadcast of initial and follow-up instructions to the public throughout the EPZ, on a 24-hour-a-day, 7-day-a-week basis. See 10 C.F.R. Part 50, App. E § IV.D.3. The EBS thus establishes means for early notification and clear instruction to the populace within the EPZ, and provides for prompt communications to the public. See 10 C.F.R. § 50.47(b)(5) and (6); NUREG-0654, Rev. 1, Supp. 1, § II.E.5 and 6, and App. 3; FEMA REP-10 at E-4.

17. Q. Does that conclude your testimony?

A. [Crocker, Dippell, Johnson] Yes.

ATTACHMENT A

DOUGLAS M. CROCKER

MANAGER, NUCLEAR EMERGENCY PREPAREDNESS DIVISION
NUCLEAR OPERATIONS SUPPORT DEPARTMENT
LONG ISLAND LIGHTING COMPANY

EDUCATION

Stevens Institute of Technology - B.E. with Honor in Mechanical Engineering, 1972

State University of New York at Stony Brook - M.S. in Marine Environmental Science, 1978

Stone & Webster Radiological Safety Course

Medical Aspects of Radiological Emergencies Course, New York Academy of Medicine, 1983

Harvard School of Public Health, "Planning for Nuclear Emergencies," 1985

Harvard School of Public Health, "Advanced Planning for Nuclear Emergencies," 1986

EXPERIENCE SUMMARY

During the period May 1980 to the present, Mr. Crocker was generally responsible for preparing emergency plans, procedures, training programs, exercise scenarios and other emergency planning activities. He was actively involved in ASLB licensing hearings on emergency planning. He has participated in many practice exercises and has observed many emergency plan exercises.

Mr. Crocker is presently Nuclear Emergency Preparedness Manager responsible for the SNPS Onsite and Offsite (LERO) Emergency Preparedness Programs. This consists of developing and maintaining facilities, plans, procedures, training, and drill programs to satisfy NRC and FEMA requirements in support of the SNPS licensing effort. He directs a staff of 45 LILCO and consultant personnel.

From May 1986 to December 1987, Mr. Crocker served as Supervisor - Offsite Emergency Preparedness in addition to his duties as Manager of Nuclear Emergency Preparedness.

During the period March 1985 to June 1986, Mr. Crocker was Onsite Emergency Preparedness Supervisor responsible for all onsite planning activities including the onsite portion of the 1986 NRC observed exercise.

From September 1982 to February 1985 Mr. Crocker was Project Engineer responsible for all Stone & Webster Engineering Corp. - N.Y. emergency planning projects. In this capacity, he directed a staff of forty-five engineers and planners in the execution of up to five simultaneous projects for utility clients.

Mr. Crocker joined Stone & Webster Engineering Corporation (SWEC) in May 1976 as an Engineer in the Environmental Engineering Division. Working in the Environmental Impact Analysis Group, his activities included the mathematical modeling of cooling tower visible

plumes, coastal storm surge, and wave effects on shoreline intake structures. He has also had experience with the modeling of thermal discharges from power plants and with the collection and analysis of hydrothermal data. His past assignments include circulating water system performance tests at Shoreham Nuclear Power Station and the preparation of industrial energy survey reports for the petroleum refining and olefins industry. At Shoreham, Mr. Crocker was responsible for the collection and analysis of hydraulic transient data.

Prior to joining SWEC, Mr. Crocker worked as a Research Assistant at the Marine Science Research Center at the State University of New York at Stony Brook, collecting and analyzing oceanographic data during his graduate study from 1974 to 1976.

From 1972 to 1973, Mr. Crocker worked as an Estimator for L. K. Comstock and Co., Inc., preparing bids for electrical construction projects.

PUBLICATIONS

"Radiological Protection Issues Associated with the Establishment and Operation of Public Evacuee Reception Centers on Long Island," D. M. Crocker, D. P. Dreikorn, and R. J. Watts, to be presented at the Health Physics Society Annual Meeting, Boston, Mass., July, 1988.

"Development and Verification of a Synthetic Northeaster Model in Application to Coastal Flooding," Y. J. Tsai, D. M. Crocker, T. J. Burda, and F. K. Chou, Proceedings of National Symposium on Urban Storm Water Management in Coastal Areas, 1980.

"Intake Screenwall Surging Caused by Wave Dynamics," Y. J. Tsai, Y. C. Chang, and D. M. Crocker, Hydraulics in the Coastal Zone, 1979.

"EN-129: Cooling Tower Visible Plume Model - User's Manual," Y. J. Tsai and D. M. Crocker, Stone & Webster Engineering Corp., April 1977.

"EM-128 - Intake Surge Model - User's Manual," D. M. Crocker and Y. C. Chang, Stone & Webster Engineering Corp., August 1977.

AWARDS

Stone & Webster Engineering Corporation's "Ten Best Papers Award," 1980.

DETAILED EXPERIENCE RECORD
DOUGLAS M. CROCKER

LONG ISLAND LIGHTING COMPANY, SHOREHAM NUCLEAR POWER STATION (May 1984 to present)

Manager, Nuclear Emergency Preparedness Division (July 1986 to present)

Mr. Crocker is responsible for all Nuclear Emergency Preparedness activities for the Shoreham Nuclear Power Station. He oversees the onsite and offsite (LERO) emergency preparedness programs to ensure a satisfactory level of preparedness. He is responsible for plans, procedures, drills, training, exercises, and facilities for the 3600 member emergency response organization. In this effort, he directs a staff of 45 LILCO and consultant personnel. Additional duties include providing technical support and testimony in ASLB licensing hearings, coordinating with legal support organizations, and coordinating exercise activities with NRC and FEMA. During the period July 1986 to December 1987, Mr. Crocker also served as Acting Offsite Emergency Preparedness Supervisor.

Offsite Emergency Preparedness Supervisor (May 1986 to July 1986)

Mr. Crocker was responsible for the development and maintenance of the Local Emergency Response Organization (LERO). He was responsible for the LERO plan and procedures, training, drills, and facility maintenance. He supervised a staff of twelve LILCO and consultant personnel. Additional duties included support of ASLB licensing hearings on emergency preparedness issues and the resolution of FEMA plan and exercise comments.

Onsite Emergency Preparedness Supervisor (March 1985 to May 1986)

Mr. Crocker was responsible for the Onsite Emergency Preparedness Program. He directed the preparation and maintenance of: (1) SNPS Emergency Plan and Procedures, (2) Emergency Response facilities, (3) Emergency Preparedness Training Program, and (4) Emergency Preparedness Drill Program. He was responsible for preparations for the successful onsite portions of the first NRC observed exercise. He directed a staff of ten LILCO and consultant personnel in this effort.

Onsite Emergency Preparedness Coordinator (acting) (May 1984 to February 1985)

Mr. Crocker came to SNPS as a Stone & Webster employee in May 1984 to serve as an interim replacement for the departing LILCO coordinator. He was responsible for the onsite emergency preparedness preparations for the first NRC observed exercise. Mr. Crocker left Stone & Webster to work for LILCO in the same capacity.

STONE & WEBSTER ENGINEERING CORPORATION, NEW YORK, N.Y. (May 1976 to February 1985)

Appointments:
Project Engineer - 1982
Environmental Engineer - 1982
Engineer - Environmental - May 1976

Emergency Planning, SWEC-NY (September 1982 to February 1985)

Mr. Crocker was PROJECT ENGINEER, responsible for all emergency planning work in SWEC-NY, supervising a group of approximately forty-five planners.

Long Island Lighting Company (September 1982 to February 1985)

Mr. Crocker was PROJECT ENGINEER, coordinating planning support services by SWEC personnel at LILCO headquarters and the Shoreham site.

Public Service Company of Indiana (September 1982 to January 1984)

Mr. Crocker was PROJECT ENGINEER for emergency planning for the Kentucky portions of the Marble Hill NGS emergency planning zone. He was responsible for the preparation of state and county plans, procedures and training.

State of Delaware (September 1982 to November 1983)

Mr. Crocker was PROJECT ENGINEER, directing emergency plan, procedure, and training program development for the Delaware Department of Emergency Planning and Operations.

Cincinnati Gas & Electric Company (May 1980 to January 1984)

Mr. Crocker was PROJECT ENGINEER for emergency planning for the Wm. H. Zimmer Nuclear Power Station in Moscow, Ohio. He was responsible for all offsite emergency plans, procedures, and training, and provided licensing support to CG&E during its ASLB hearings.

Brookhaven National Laboratory (March 1980 to April 1980)

Mr. Crocker was assigned to a feasibility study of alternative fuel uses in industrial boilers and furnaces.

Long Island Lighting Company (November 1979 to February 1980)

Mr. Crocker was assigned to the pressure and performance testing of the cooling water circulating system at the Shoreham Nuclear Power Station, where he was responsible for data collection and analysis.

U.S. Department of Housing and Urban Development, Federal Flood Insurance Administration (FIA) (March 1978 to December 1978)

Mr. Crocker conducted Flood Innsurance Studies for nine coastal communities in Maine. He was PRINCIPAL COASTAL INVESTIGATOR, responsible for the development of a synthetic northeaster storm model and for the analysis of coastal flood elevations.

U.S. Department of Housing and Urban Development, Federal Flood Insurance Administration (FIA) (June 1977 to March 1978)

Mr. Crocker was SUPPORT COASTAL ENGINEER for the Maine flood study. He was assigned to northeaster computer model development.

National Oil Company, Libya (May 1977 to June 1977)

He was responsible for a wave and surge study for intake design. Mr. Crocker determined design parameters of an intake structure located on the Mediterranean Sea.

Indiana Power & Light Company (March 1977 to July 1977)

Mr. Crocker analyzed the hydrothermal characteristics of a cooling tower blowdown discharge into the Ohio River.

Millstone Unit No. 3, Northeast Utilities (May 1977)

Mr. Crocker conducted a hurricane surge and wave study for the design of a cooling water intake structure.

Long Island Lighting Company (January 1977 to April 1977)

Mr. Crocker participated in hurricane surge and wave analysis. He developed a computer model of intake screenwell surging in response to storm waves. He also calculated storm surge elevations caused by a modified probable maximum hurricane.

Koshkonong Units 1 and 2, Wisconsin Electric Power (January 1977 to March 1977)

He analyzed hydrothermal characteristics of a cooling tower blowdown discharge into the Rock River.

Mystic Station Unit No. 7, Boston Edison Company (August 1976 to January 1977)

Mr. Crocker conducted a hydrothermal field survey and data analysis. He was responsible for a temperature and dye field survey and subsequent analysis to determine the hydrothermal characteristics of a fossil power plant once through cooling system discharge and its effects on circulation in the Mystic River Estuary.

Jamesport Units 1 and 2, Long Island Lighting Company (July 1976 to August 1986)

Mr. Crocker conducted an analysis of wave forces in the interior of the cooling water intake structure.

Montague Units 1 and 2, Northeast Utilities (May 1976 to July 1976)

Mr. Crocker was responsible for the modification and verification of a cooling tower visible plume model. He incorporated upper air sounding data into the analysis of plumes.

State University of New York at Stony Brook (1975 to 1976)

As a RESEARCH ASSISTANT, Mr. Crocker developed computer models of tidal circulation in New York Harbor and the Peconic Estuary.

ATTACHMENT B

COHEN AND DIPPELL, P.C.

Cohen and Dippell, P.C. and its predecesors, have provided professional engineering service since 1938 to the U.S. broadcasting industry, and also have provided worldwide service including feasibility studies, design and commissioning of broadcast facilities.

Cohen and Dippell, P.C. provides engineering support for FCC applications, and expert testimony before FCC administrative law judges, the FAA, civil courts, city councils, and zoning boards. Primary services include: complete planning of AM, FM, and TV broadcast and auxiliary facilities; design and proofing of directional antenna systems; AM, FM and TV signal strength measurements for determining coverage, verification of antenna performance, site suitability and interference; radiation exposure limit studies and field tests, and equipment appraisals.

Resume of Ralph E. Dippell, Jr.

Ralph E. Dippell, Jr. is a graduate electrical engineer, a registered professional engineer, in the District of Columbia (Registered Number 1385) and is a Vice President of the firm of Cohen and Dippell, P.C., Consulting Engineers, Radio-Television, with offices at 1015 15th Street, N.W., Suite 703, Washington, D.C. 20005. He is a member and past president of the Association of Federal Communications Consulting Engineers, and a member of the Institute of Electrical and Electronics Engineers, and the American Astronautical Society.

January 1973 to Present

Formation of Corporation, Cohen and Dippell, P.C. with Ralph E. Dippell, Jr. as Vice President.

January 1970 to January 1973

He was a partner with Julius Cohen in the firm of Cohen and Dippell, Consulting Engineers, which was a continuation of the prior partnership following the retirement of George C. Davis and Walter L. Davis.

1947 to 1970

From 1947 to 1956, he was employed by George C. Davis, Consulting Engineer, as a Radio-Television Engineer. From 1956 to 1970, he was a partner in the firm of George C. Davis, Consulting Engineers, Radio-Television. A description of his duties and work performed from 1947 to the present are as follows:

He has been responsible for the design and adjustment of numerous multi-element directional antenna systems for broadcast stations; for frequency allocation and interference studies; for field intensity measurement surveys for AM, FM, and TV, for CATV and Microwave Systems; for the preparation of engineering exhibits for submission to the Federal Communications Commission re: applications, objections, petitions and hearings. He has appeared many times over the past 40 years as expert engineering witness in Federal Communications Commission hearings on radio and television matters.

1947

He graduated from the University of Illinois, Urbana, Illinois, with the degree, Bachelor of Science in Electrical Engineering.

1942 - 1945

He was in the United States Army during this period. In 1943, he attended the Army Signal Corps School, Fort Monmouth, New Jersey, enrolled in the Repeater and Carrier (long distance telephone) course. 1943 through 1944, he attended Rutgers University, New Brunswick, New Jersey, and completed the full course of the Army Specialized Training Program in Electrical Engineering. 1944 through 1945, he was with the 414th Infantry, 104th Division, in combat from Normandy to V-E Day, holding the French Croix de Guerre, Bronze Star, and Combat Infantryman's Medal.

1941 - 1942

He attended George Washington University, Washington, D.C., with the major field of study in chemistry.

1940 - 1941

He attended the University of Illinois, Urbana, Illinois, with the major field of study in Chemical Engineering.

1940

He graduated from Central High School, Memphis, Tennessee.

ATTACHMENT C

ATTACHMENT C

WILLIAM G. JOHNSON
Summary of
Professional Qualifications

Current Positions: President, Campaign Research, Inc., 559 Gramatan Avenue, Mt. Vernon, New York 10552, and Bill Johnson & Associates, Inc. President of Bill Johnson & Associates, Inc. since 1982 and President of Campaign Research, Inc. since 1985. Extensive experience in surveys and survey research. Bill Johnson & Associates, Inc. and Campaign Research, Inc. are companies that specialize in survey research, and issue and political analysis. They have a variety of governmental, corporate, and political clients. Recent clients include the New York Power Authority, Consolidated Edison, Long Island Lighting Company, Philip Morris, Local 1180 of the Community Workers of America, United Fire Fighters Association, White Plains (New York) Board of Education, Help Inc., Suffolk County Executive Patrick Halpin, Mayor Edward I. Koch, Borough Presidents Claire Shulman, Fernando Ferrer, David Dinkins, and Howard Golden, and Congressmen Tom Manton, Floyd Flake, Ted Weiss, and Robert Garcia.

1976-1982: Executive Vice President of Century Opinion Polls, Inc., Great Neck, New York.

1975-1976: Project Director of Welfare Research, Inc., Albany, New York.

B.S., Political Science, Yale University, 1966. Attended the University of Michigan Survey Research Center Summer Program in Research Methodology, 1964.

ATTACHMENT D

ENGINEERING REPORT
RE FIELD STRENGTH MEASUREMENT SURVEY
OF RADIO STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT
WPLR(FM), NEW HAVEN, CONNECTICUT
FOR LONG ISLAND LIGHTING COMPANY
JUNE 1987

COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN AND DIPPELL, P. C.

ENGINEERING REPORT
RE FIELD STRENGTH MEASUREMENT SURVEY
OF RADIO STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT
WPLR(FM), NEW HAVEN, CONNECTICUT
FOR LONG ISLAND LIGHTING COMPANY
JUNE 1987

COHEN AND DIPPELL, P. C.

City of Washington)
)ss
District of Columbia)

Ralph E. Dippell, Jr., being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and Vice President of Cohen and Dippell, P.C., Consulting Engineers, Radio - Television, with offices at 1015 15th Street, N.W., Suite 703, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

That the attached engineering report was prepared by him or under his supervision and direction and;

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts, he believes them to be true.

Ralph E. Dippell, Jr.
District of Columbia
Professional Engineer
Registration No. 1385

Subscribed and sworn to before me this 12th day of June, 1987.

Notary Public
My Commission Expires
February 29, 1988

This engineering report has been prepared on behalf of Long Island Lighting Company (LILCO) to provide the results of field tests conducted in a specific area on radio stations WEZN(FM), Bridgeport, Connecticut, and WPLR(FM), New Haven, Connecticut. The purpose of the field test was to verify the signal level of these two FM stations in the Emergency Planning Zone (EPZ) area associated with the LILCO power facility at Shoreham, New York.

WEZN(FM), Bridgeport, Connecticut, operates on Channel 260B (99.9 mHz) with an effective radiated power (ERP) of 27.5 kilowatts and an antenna height above average terrain (AHAAT) of 204 meters. WPLR(FM), New Haven, Connecticut, operates on Channel 256B (99.1 mHz) with an ERP of 14.1 kilowatts and an AHAAT of 290 meters. Both stations operate with the maximum facilities permitted for Class B FM stations under the FCC Rules.

The measurements were made by Robert W. Guill and Sudhir K. Khanna of Cohen and Dippell, P.C. in accordance with Section 73.314 of the FCC Rules (Code of Federal Regulations 47). Analysis of all the field strength measurement data supports that WEZN(FM) and WPLR(FM) provide the FCC recognized signal level of 1 mV/m (60 dBu) to the EPZ area based on both the grid and radial methods for determining FM service.

Field strength measurements were made in the EPZ using the grid pattern procedure for establishing the median signal level

to the area. A rectangular grid of approximately 3 kilometers was selected to encompass the boundaries of the EPZ and meet the minimum number of measurement locations according to the formula 0.1(P)1/2 provided in the FCC Rules. This procedure is outlined in Section 73.314(c)(1)(ii) of the FCC Rules and is based on the population within the area or community being surveyed. In order to determine the minimum number of measurement locations, the population within the EPZ was counted based on 1980 U.S. census data.

In addition to the grid procedure, radial measurements were also conducted on both WEZN(FM) and WPLR(FM). Three radials from each station were drawn from the respective transmitter sites through the EPZ. Beginning at 16 kilometers from the WPLR(FM) transmitter site and at successive 3 kilometer intervals, where possible, measurements were made to the south shore of Long Island. Due to the location of the WEZN(FM) transmitter site in relation to Long Island sound, measurements on the WEZN(FM) radials began on the north shore of Long Island and were made at successive 3 kilometer intervals, where possible, to the south shore.

In addition to making field strength measurements, listening tests were also conducted on both stations. The stations were alternately monitored throughout the measured

area and recorded on a Sony receiver, FM/AM stereo cassette-corder, model number CFS-950. The Sony receiver utilized is a portable, battery operated unit which has a telescopic antenna and considered to be of average quality and price. The unit was placed on the front seat of the test vehicle for making the recordings. In many instances the recorded audio of WEZN(FM) and WPLR(FM) was performed while making the mobile run of the field strength measurements.

WEZN(FM) and WPLR(FM) provide a very good signal level throughout the measured area, and nothing was heard that suggested any reception problems. Detail notes describing each measuring location and the audio cassettes are not included with this report, but are available upon request.

The field strength measurements were made during mobile runs of 100 feet or longer with a receive antenna elevated 30 feet above ground level. The vehicle used for the test was a specially modified station wagon which employs a telescopic pneumatic mast. The mast can be extended to a 30 foot elevation above ground. The horizontally polarized dipole receive antenna manufactured by Potomac Instruments, Inc. was mounted at the end of a T-bar centered on top of the mast. The transmission line from the antenna was connected to a Potomac Instruments field strength meter, Type FIM-71, Serial 258,

calibrated by the manufacturer on June 4, 1986. The output of the field meter was connected to an ink pen of a Soltec chart recorder. The paper drive on the chart recorder was driven from a device connected to the vehicle speedometer cable. Each signal trace on the chart represents a graph of field strength versus distance for a particular location. The attached graph illustrate the WEZN(FM) and WPLR(FM) signal traces at specific measurement locations.

Tabulations of the measured field strengths are included on Tables I through VII. Tables I through VI contain the radial data and show the point number, ground elevation AMSL in meters, distance from the transmitting antenna in kilometers, date and time, median value of the horizontal measured field strength in dBu, and the minimum and maximum field strength in dBu for the measurement point locations. Table VIII is a tabulation of the grid measurements and shows the point number, ground elevation AMSL in meters, date and time, the WEZN(FM) median value of the horizontal measured field strength in dBu, the minimum and maximum field strength in dBu for the measurement location, the WPLR(FM) median value of the horizontal measured field strength in dBu, and the minimum and maximum field strength in dBu for the measurement location.

The field strength measurements were plotted in dBu on the attached graphs of field strength versus distance for each radial direction of WEZN(FM) and WPLR(FM). A curve determined to best fit the measured data was then drawn on the graph and used to determine the extent of the 1 mV/m (60 dBu) contour. Also provided with this engineering report are the following.

(1) Detailed maps showing the measurement point locations.

(2) Exhibit showing the grid locations in relation to the EPZ.

(3) Exhibits showing the radials, measurement locations, and the measured 1 mV/m contour in relation to the EPZ for stations WEZN(FM) and WPLR(FM).

Conclusion

Based upon either FCC method of measurement, both WEZN(FM), Bridgeport, Connecticut, and WPLR(FM), New Haven, Connecticut, provide the FCC recognized signal level of 1 mV/m (60 dBu) to the entire Emergency Planning Zone.

COHEN AND DIPPELL, P. C.

TABLE I

FIELD STRENGTH MEASUREMENTS
WEZN(FM), BRIDGEPORT, CONNECTICUT
CHANNEL 260B (99.9 MHZ) 27.5 KW 204 METERS (HAAT)
JUNE 1987

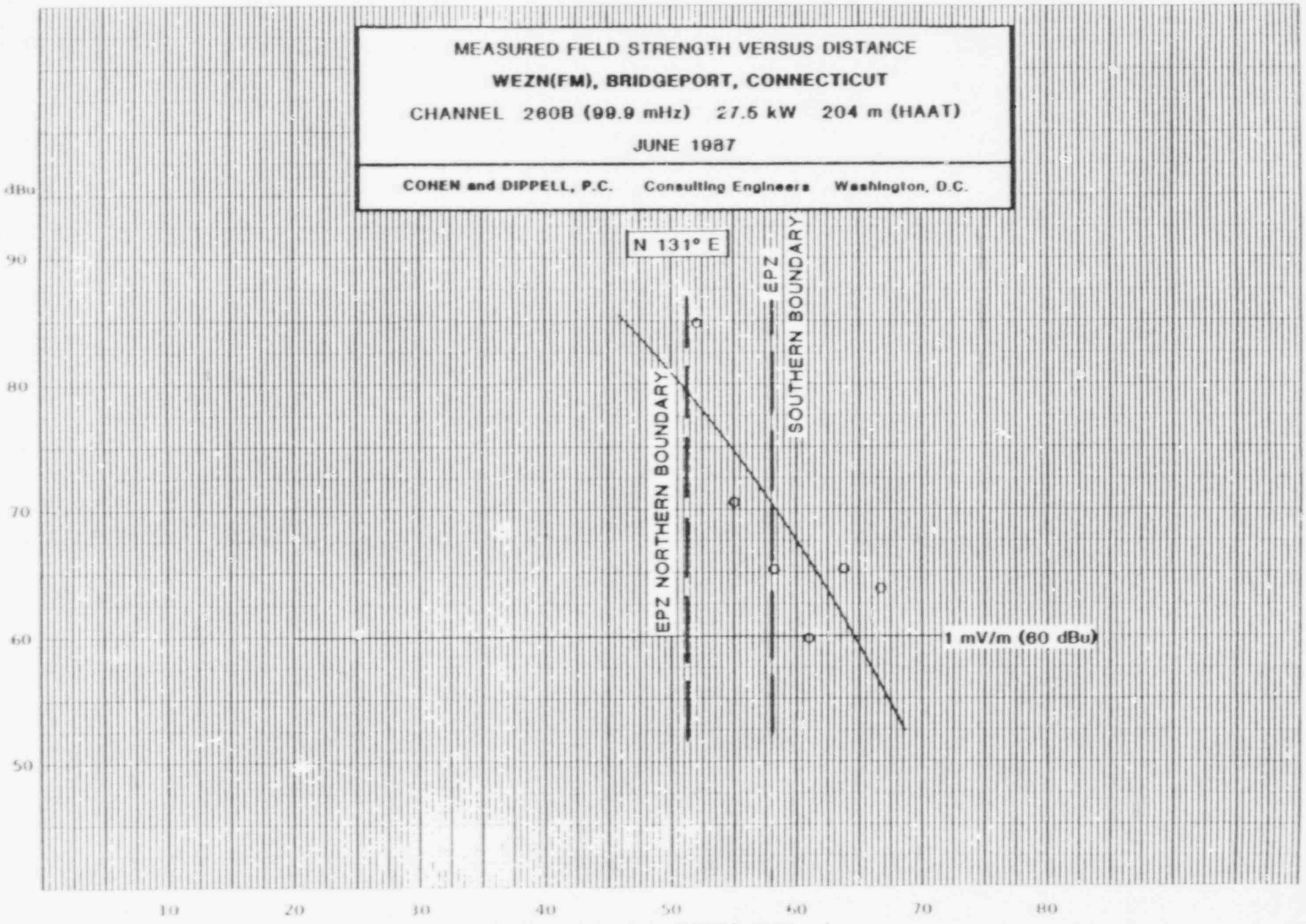
N 131°E

Point Number	Ground Elevation meters [1	Distance From Transmitter kilometers	Date	Time	Measured Horizontal Field Strength Median dBu [2	Min/Max dBu [3
1	46	52.0	5/15	1037	84.9	81.9-87.2
2	23	55.0	"	1030	70.6	69.9-70.9
3	9	58.2	"	1020	65.2	63.9-66.9
4	2	61.0	"	1005	59.9	56.9-62.9
5	5	63.8	"	0950	65.2	60.6-68.2
6	14	66.8	"	0923	63.6	61.2-65.6

[1 Elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

[3 Minimum and maximum field strength recorded for the measurement location


MEASURED FIELD STRENGTH VERSUS DISTANCE
WEZN(FM), BRIDGEPORT, CONNECTICUT
CHANNEL 260B (99.9 mHz) 27.5 kW 204 m (HAAT)
JUNE 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 131° E
EPZ NORTHERN BOUNDARY
EPZ
SOUTHERN BOUNDARY
1 mV/m (60 dBu)
dBu
90
80
70
60
50
10
20
30
40
50
60
70
80

COHEN AND DIPPELL, P. C.

TABLE II

FIELD STRENGTH MEASUREMENTS
WEZN(FM), BRIDGEPORT, CONNECTICUT
CHANNEL 260B (99.9 MHZ) 27.5 KW 204 METERS (HAAT)
JUNE 1987

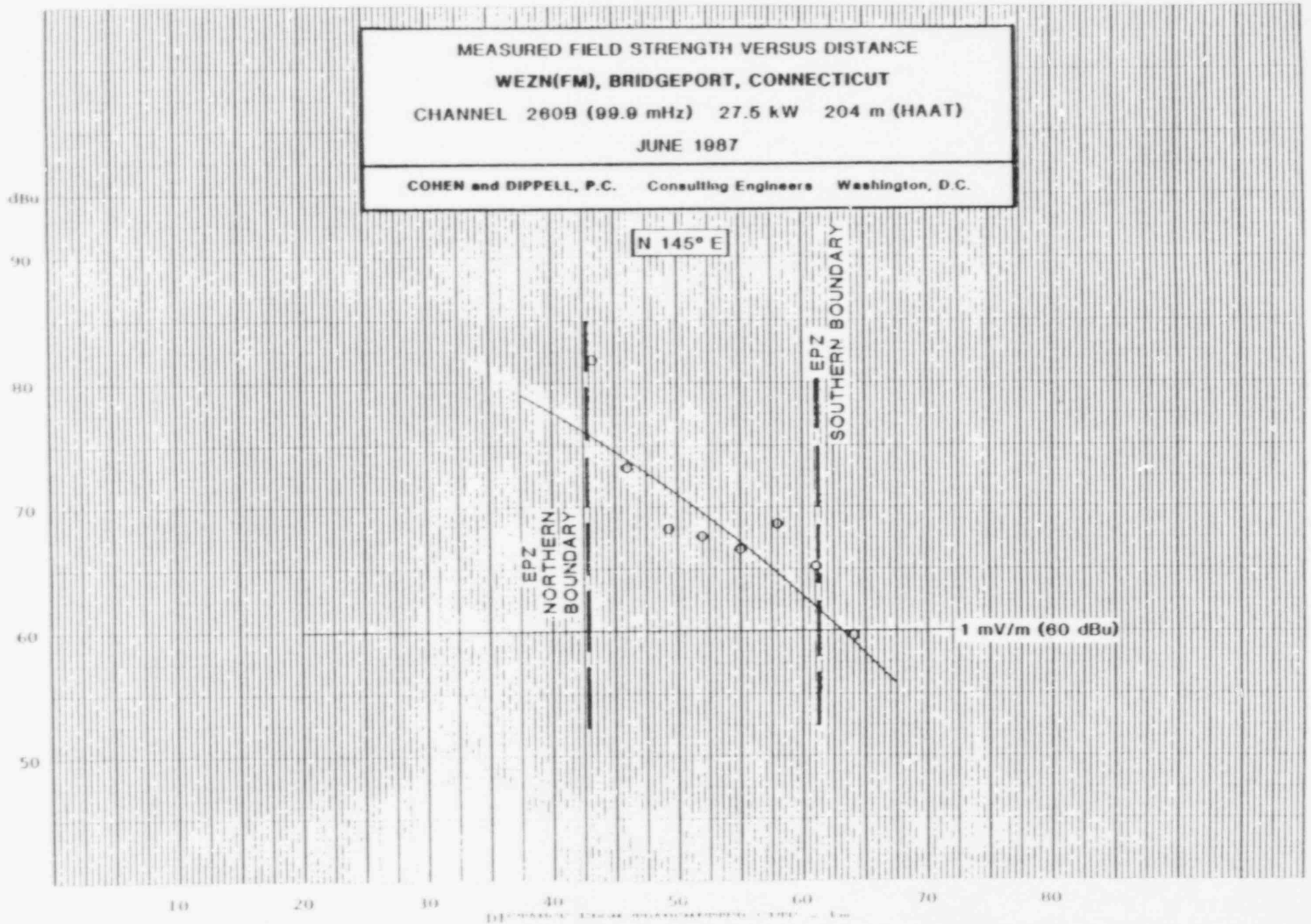
N 145°E

Point Number	Ground Elevation meters [1	Distance From Transmitter kilometers	Date	Time	Measured Horizontal Field Strength Median dBu [2	Min/Max dBu [3
1	40	43.3	5/15	1736	81.9	76.9-83.9
2	34	46.0	"	1746	73.2	70.9-74.6
3	19	49.4	"	1803	68.2	65.6-70.2
4	17	52.0	"	1814	67.6	62.2-70.9
5	17	55.0	"	1829	66.6	63.9-67.6
6	17	58.0	"	1845	68.6	61.6-74.9
7	20	61.1	"	1855	65.2	63.6-67.6
8	3	64.1	"	1905	59.6	54.9-62.9

[1 Elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

[3 Minimum and maximum field strength recorded for the measurement location


MEASURED FIELD STRENGTH VERSUS DISTANCE
WEZN(FM), BRIDGEPORT, CONNECTICUT
CHANNEL 260B (99.9 mHz) 27.5 kW 204 m (HAAT)
JUNE 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 145° E
EPZ SOUTHERN BOUNDARY
EPZ NORTHERN BOUNDARY
1 mV/m (60 dBu)
dBu
90
80
70
60
50
10
20
30
40
50
60
70
80

COHEN AND DIPPELL, P. C.

TABLE III

FIELD STRENGTH MEASUREMENTS
WEZN(FM), BRIDGEPORT, CONNECTICUT
CHANNEL 260B (99.9 MHZ) 27.5 KW 204 METERS (HAAT)
JUNE 1987

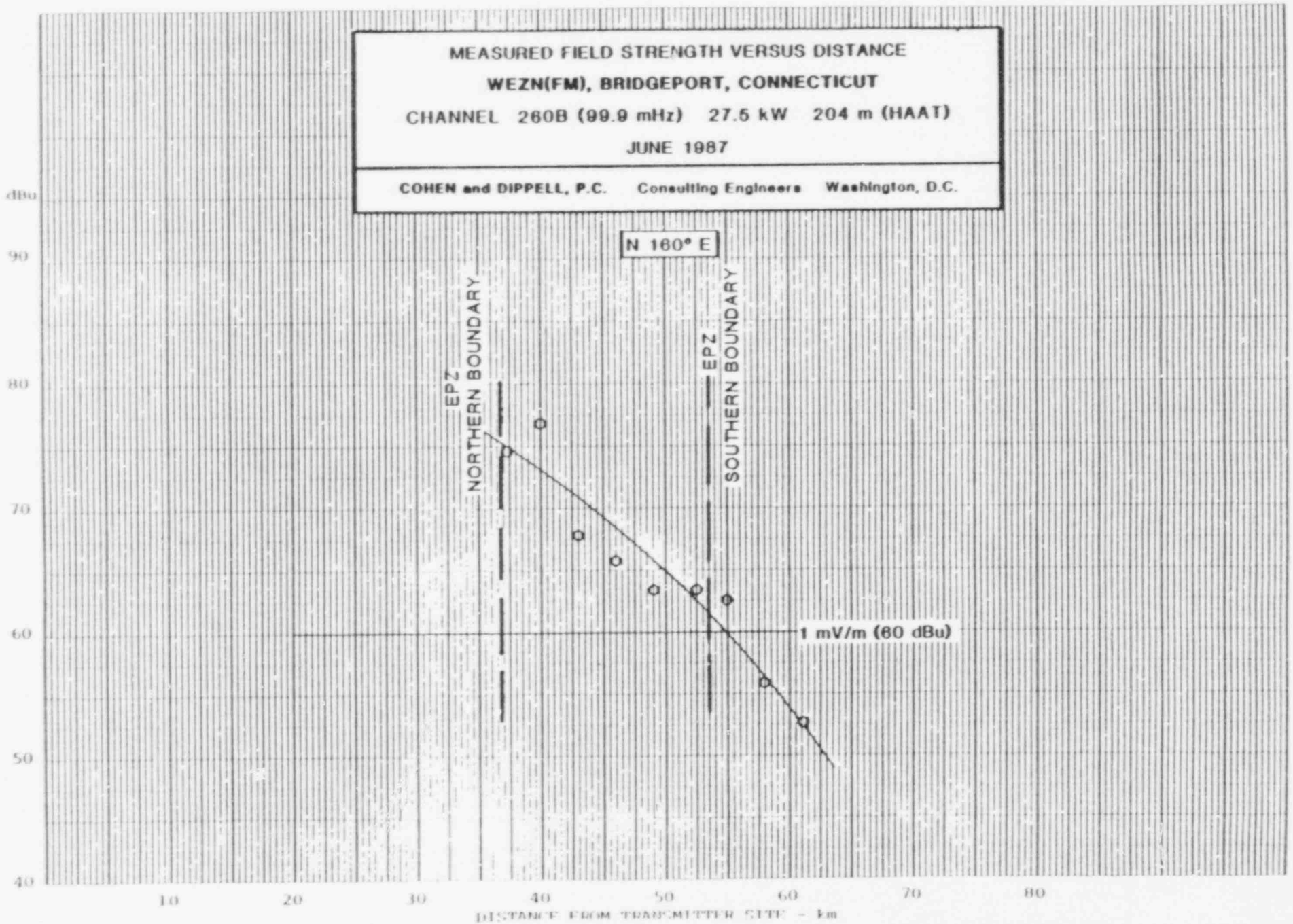
N 160°E

Point Number	Ground Elevation meters [1	Distance From Transmitter kilometers	Date	Time	Measured Horizontal Field Strength Median dBu [2	Min/Max dBu [3
1	1	37.3	5/16	1201	74.6	72.2-77.6
2	49	40.0	"	1238	76.9	73.6-79.6
3	40	43.0	"	1250	67.9	64.9-69.6
4	31	46.0	"	1301	65.9	61.6-69.6
5	32	49.0	"	1330	63.2	54.9-68.9
6	38	52.5	"	1344	63.4	58.9-65.6
7	29	55.0	5/18	1055	62.6	59.6-64.2
8	20	58.0	5/16	1540	55.9	54.2-58.2
9	10	61.1	"	1525	52.7	50.2-54.2

[1 Elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

[3 Minimum and maximum field strength recorded for the measurement location


MEASURED FIELD STRENGTH VERSUS DISTANCE
WEZN(FM), BRIDGEPORT, CONNECTICUT
CHANNEL 260B (99.9 mHz) 27.5 kW 204 m (HAAT)
JUNE 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 160° E
EPZ
NORTHERN BOUNDARY
EPZ
SOUTHERN BOUNDARY
1 mV/m (60 dBu)
dBu
90
80
70
60
50
40
10
20
30
40
50
60
70
80
DISTANCE FROM TRANSMITTER SITE - km

COHEN AND DIPPELL, P. C.

TABLE IV

FIELD STRENGTH MEASUREMENTS
WPLR(FM), NEW HAVEN, CONNECTICUT
CHANNEL 256B (99.1 MHZ) 14.1 KW 290 METERS (HAAT)
JUNE 1987

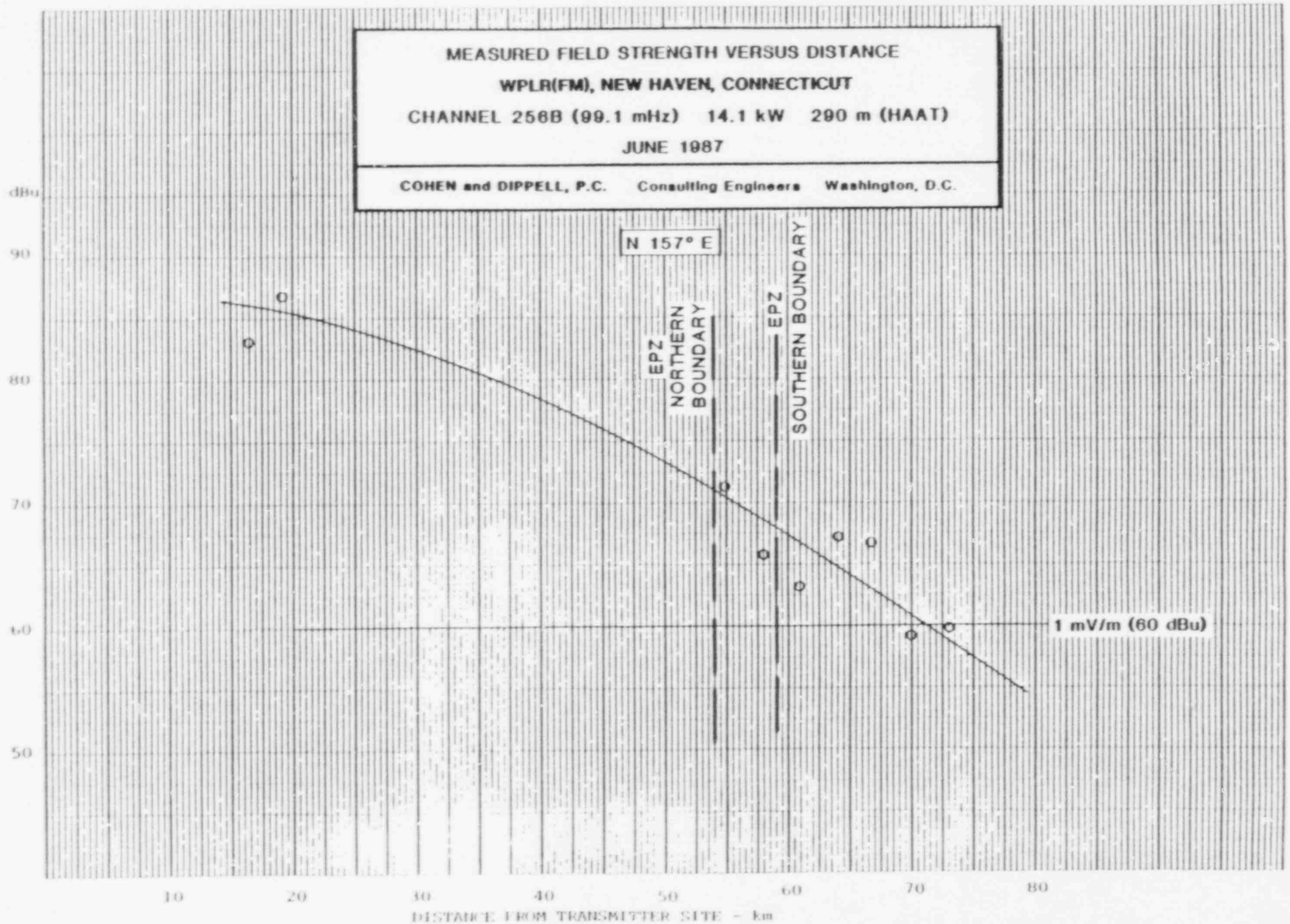
N 157°E

Point Number	Ground Elevation meters [1	Distance From Transmitter kilometers	Date	Time	Measured Horizontal Field Strength Median dBu [2	Min/Max dBu [3
1	6	16.5	5/19	1714	83.2	80.9-85.6
2	18	19.2	"	1702	86.9	82.2-91.6
3	31	54.9	5/15	1050	71.2	68.9-72.9
4	12	58.0	"	1103	65.9	64.2-66.9
5	9	60.9	"	1205	63.2	58.9-66.2
6	9	64.0	"	1220	67.2	65.9-68.2
7	27	66.8	"	1307	66.6	66.2-67.2
8	18	70.0	"	1257	59.2	56.9-60.9
9	2	73.0	"	1246	59.9	57.6-60.9

[1 Elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

[3 Minimum and maximum field strength recorded for the measurement location


MEASURED FIELD STRENGTH VERSUS DISTANCE
WPLR(FM), NEW HAVEN, CONNECTICUT
CHANNEL 256B (99.1 mHz) 14.1 kW 290 m (HAAT)
JUNE 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 157° E
EPZ NORTHERN BOUNDARY
EPZ SOUTHERN BOUNDARY
1 mV/m (60 dBu)
dBu
90
80
70
60
50
10
20
30
40
50
60
70
80
DISTANCE FROM TRANSMITTER SITE - km

COHEN AND DIPPELL, P. C.

TABLE V

FIELD STRENGTH MEASUREMENTS
WPLR(FM), NEW HAVEN, CONNECTICUT
CHANNEL 256B (99.1 MHZ) 14.1 KW 290 METERS (HAAT)
JUNE 1987

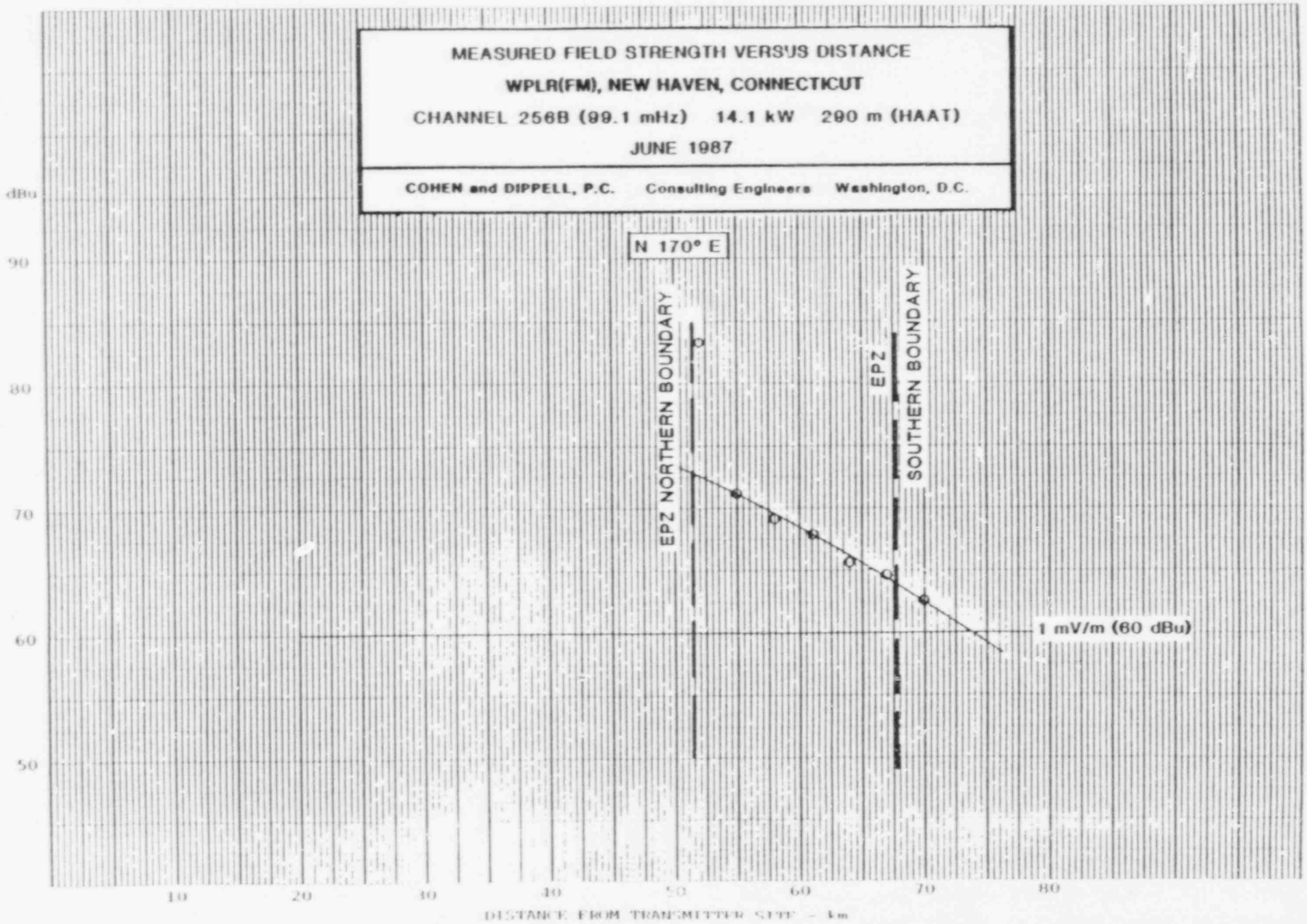
N 170°E

Point Number	Ground Elevation meters [1	Distance From Transmitter kilometers	Date	Time	Measured Horizontal Field Strength Median dBu [2	Min/Max dBu [3
1	40	52.0	5/15	1716	83.2	79.6-84.2
2	34	55.0	"	1651	71.9	67.9-74.2
3	23	58.0	"	1640	69.2	65.6-71.6
4	14	61.2	"	1630	67.9	64.9-69.6
5	15	64.0	"	1618	65.6	64.2-68.9
6	20	67.0	"	1600	64.6	62.9-66.9
7	11	70.0	"	1522	62.6	61.2-62.9

[1 Elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

[3 Minimum and maximum field strength recorded for the measurement location



COHEN AND DIPPELL, P. C.

TABLE VI

FIELD STRENGTH MEASUREMENTS
WPLR(FM), NEW HAVEN, CONNECTICUT
CHANNEL 256B (99.1 MHZ) 14.1 KW 290 METERS (HAAT)
JUNE 1987

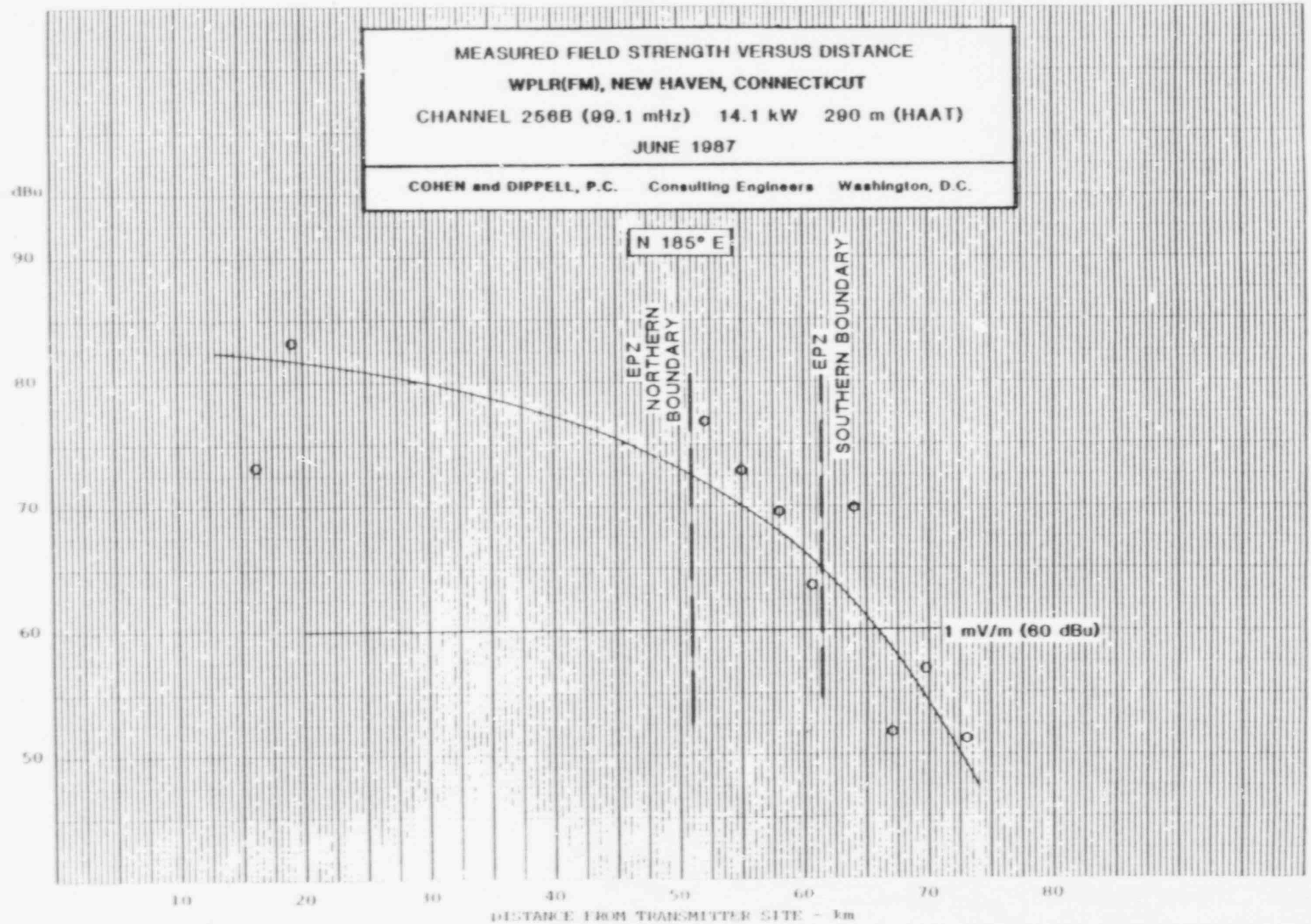
N 185°E

Point Number	Ground Elevation meters [1	Distance From Transmitter kilometers	Date	Time	Measured Horizontal Field Strength Median dBu [2	Min/Max dBu [3
1	18	16.2	5/18	1614	73.2	50.2-79.6
2	29	19.1	"	1637	83.2	64.2-86.9
3	43	1.0	5/16	1124	76.9	64.2-86.9
4	47	55.0	"	1046	7[illegible].9	68.9-79.6
5	40	58.0	"	1033	69.6	67.6-72.9
6	27	60.7	"	0957	63.6	54.9-67.6
7	70	64.0	"	0940	69.9	65.6-76.9
8	27	67.0	5/14	1958	51.9	45.6-52.9
9	18	69.8	"	1940	56.9	54.2-59.2
10	8	73.0	"	1915	51.2	48.6-53.6

[1 Elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

[3 Minimum and maximum field strength recorded for the measurement location


MEASURED FIELD STRENGTH VERSUS DISTANCE
WPLR(FM), NEW HAVEN, CONNECTICUT
CHANNEL 256B (99.1 mHz) 14.1 kW 290 m (HAAT)
JUNE 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 185° E
EPZ NORTHERN BOUNDARY
EPZ SOUTHERN BOUNDARY
1 mV/m (60 dBu)
dBu
90
80
70
60
50
10
20
30
40
50
60
70
80
DISTANCE FROM TRANSMITTER SITE - km

COHEN AND DIPPELL, P. C.

TABLE VII

MEASURED FIELD STRENGTH OF
WEZN(FM), BRIDGEPORT, CONNECTICUT
WPLR(FM), NEW HAVEN, CONNECTICUT
IN THE EMERGENCY PLANNING ZONE (EPZ)
OF LONG ISLAND LIGHTING COMPANY (LILCO)
JUNE 1987

Number	Ground Elevation meters [1	Date	Time	Measured Horizontal Field Strength WEZN(FM) Median dBu [2	WEZN(FM) Min/Max dBu [3	WPLR(FM) Median dBu [2	WPLR(FM) Min/Max dBu [3
1	37	5/19	1307	82.2	75.6-84.9	82.2	78.2-84.9
2	3	5/16	1144	67.9	54.9-78.9	71.9	60.9-81.6
3	27	5/17	1150	80.2	73.6-83.6	82.9	80.2-84.2
4	34	"	1215	76.6	72.9-78.9	81.2	79.6-82.9
5	27	5/19	1154	76.2	58.9-79.6	82.9	77.6-84.9
6	27	"	1120	84.2	78.9-88.6	66.9	60.9-71.6
7	61	"	1038	76.2	70.2-81.6	79.9	74.2-82.9
8	24	"	1023	71.6	63.6-75.6	70.9	65.2-74.9
9	34	5/18	1228	74.2	72.2-75.6	78.6	77.2-80.2
10	27	"	1212	73.6	72.9-74.6	73.2	72.6-74.2
11	18	"	1202	70.6	69.2-72.2	72.6	70.6-73.2
12	9	"	1128	60.6	55.6-63.6	60.7	50.9-64.2
13	17	"	1258	65.9	62.2-68.9	66.2	62.6-68.2
14	21	"	1244	61.9	59.6-62.9	65.2	64.2-66.2
15	27	5/19	1010	66.6	63.2-69.9	69.9	64.2-73.6
16	31	"	1054	69.9	68.2-71.6	69.6	67.6-71.6
17	31	"	1138	70.6	68.2-72.2	74.9	72.9-76.9
18	37	5/18	1206	72.2	68.2-74.2	76.6	74.9-78.2
19	34	5/19	1221	69.6	66.2-70.9	70.2	67.6-74.2
20	40	5/17	1124	68.1	64.9-69.6	72.6	71.6-74.2
21	46	5/16	1219	70.9	67.6-74.2	71.4	68.9-74.2
22	58	5/19	1244	70.9	66.2-72.2	78.6	76.9-80.6
23	40	5/16	1033	69.2	67.6-70.9	69.6	67.6-72.9
24	35	5/17	1114	65.2	61.6-66.9	69.9	66.2-72.2

COHEN AND DIPPELL, P. C.

TABLE VII

MEASURED FIELD STRENGTH OF
WEZN(FM), BRIDGEPORT, CONNECTICUT
WPLR(FM), NEW HAVEN, CONNECTICUT
IN THE EMERGENCY PLANNING ZONE (EPZ)
OF LONG ISLAND LIGHTING COMPANY (LILCO)
JUNE 1987

Number	Ground Elevation meters [1	Date	Time	Measured Horizontal Field Strength WEZN(FM) Median dBu [2	WEZN(FM) Min/Max dBu [3	WPLR(FM) Median dBu [2	WPLR(FM) Min/Max dBu [3
25	31	5/17	1042	71.9	67.2-69.6	74.7	72.2-76.9
26	34	"	1026	65.9	62.9-67.6	76.2	74.2-76.9
27	24	"	1542	68.6	66.9-69.6	71.9	70.9-72.9
28	18	"	1355	65.4	62.9-67.6	62.9	56.2-66.2
29	14	"	1341	64.2	58.9-67.6	63.9	60.9-66.2
30	15	"	1323	65.9	63.6-66.9	65.6	62.6-66.9
31	15	"	1257	67.2	62.9-70.2	69.4	66.2-70.9
32	6	5/15	1324	61.6	56.6-63.6	68.1	63.6-70.9
33	49	"	1346	61.9	58.2-63.6	66.9	63.2-69.6
34	38	5/18	1355	71.9	69.2-73.6	71.2	68.9-72.9
35	14	"	1408	67.9	66.2-69.2	67.6	64.9-68.9
36	15	5/17	1515	66.2	60.9-68.2	67.6	64.2-70.2
37	21	"	1015	62.9	60.9-65.6	67.2	64.2-69.6
38	23	"	1628	63.9	59.6-65.9	66.6	64.9-68.2
39	31	"	1055	64.6	59.9-67.6	72.4	69.6-72.2
40	24	5/19	1950	61.9	57.6-63.9	63.6	60.9-66.2
41	46	5/16	1624	63.9	58.9-66.9	65.7	60.2-68.2
42	20	"	1610	61.2	58.2-63.6	67.7	65.6-70.2
43	46	"	1711	65.4	62.9-67.6	70.2	67.9-72.2
44	21	"	1737	61.2	56.9-65.6	66.6	58.9-71.6
45	21	"	1755	63.6	62.2-65.6	69.6	68.2-70.9
46	21	"	1815	66.2	64.2-68.2	64.9	61.6-69.6
47	27	"	1418	64.2	60.2-66.2	63.2	60.2-65.6
48*	14	"	1405	60.2	56.9-62.2	62.9	58.2-65.6

COHEN AND DIPPELL, P. C.

TABLE VII

MEASURED FIELD STRENGTH OF
WEZN(FM), BRIDGEPORT, CONNECTICUT
WPLR(FM), NEW HAVEN, CONNECTICUT
IN THE EMERGENCY PLANNING ZONE (EPZ)
OF LONG ISLAND LIGHTING COMPANY (LILCO)
JUNE 1987

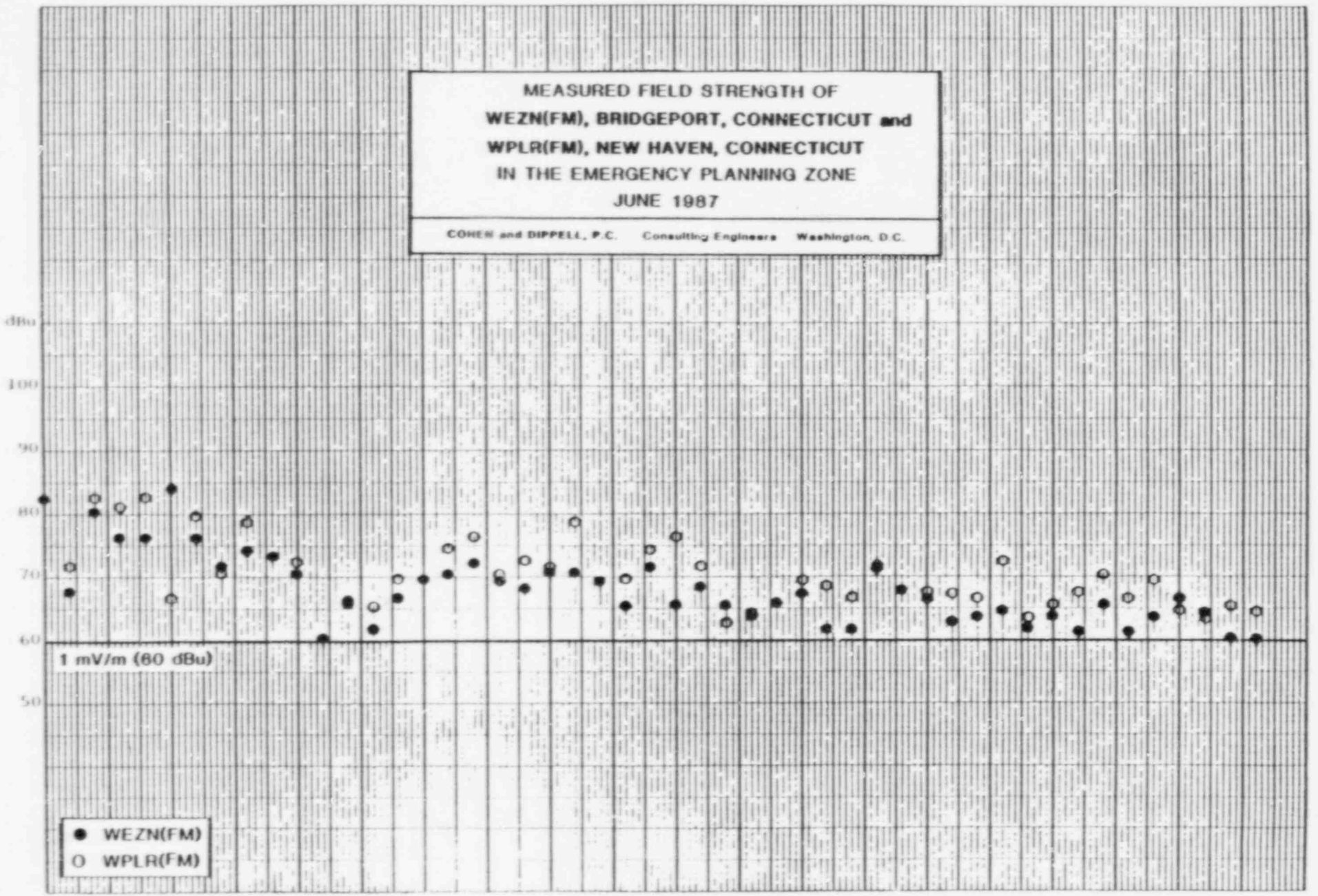
Number	Ground Elevation meters [1	Date	Time	Measured Horizontal Field Strength WEZN(FM) Median dBu [2	WEZN(FM) Min/Max dBu [3	WPLR(FM) Median dBu [2	WPLR(FM) Min/Max dBu [3
49*	20	5/16	1544	59.2	57.6-61.6	63.6	60.9-64.9
50*	14	"	1830	59.2	54.9-66.9	62.2	54.9-67.6
51	21	"	1847	60.2	58.2-62.2	65.2	63.6-66.2
52	14	5/17	0958	60.2	56.9-62.2	64.6	62.2-65.6
53*	31	5/16	1551	56.6	50.9-60.9	64.9	61.6-68.2
54*	27	"	1644	56.6	50.9-60.9	60.1	50.2-64.9

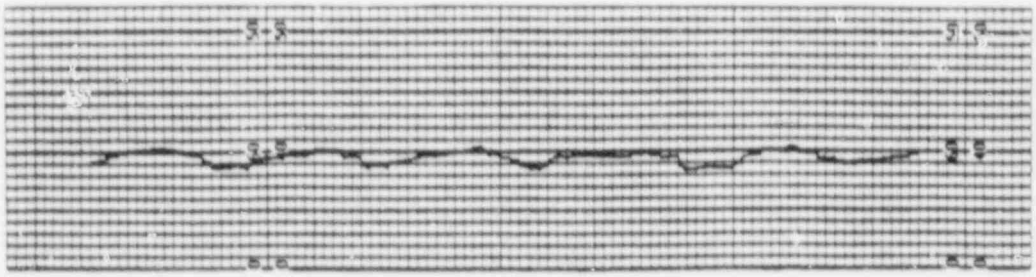
[1 Ground elevation above mean sea level rounded to nearest meter

[2 Median value of the FM signal exceeded at 50 percent of the potential receiver locations at least 50 percent of the time at a receiving antenna height of 30 feet above ground

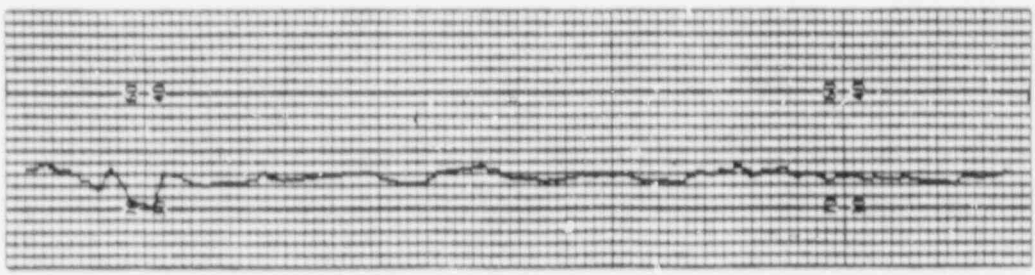
[3 Minimum and maximum field strength recorded for the measurement location

* Measurement location outside the EPZ

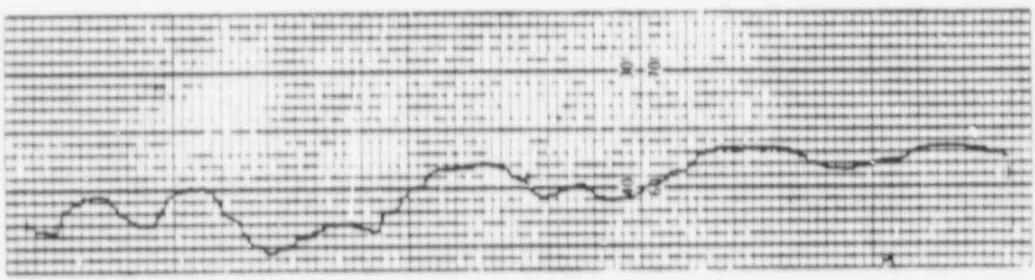




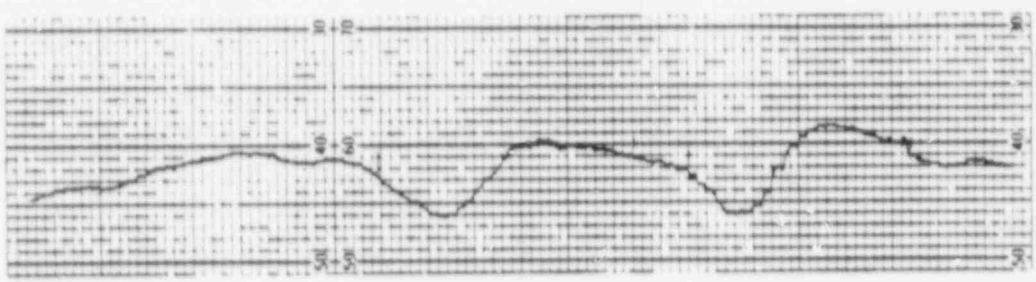
WEZN(FM) LOCATION No. 2 N 137° E



WPLR(FM) LOCATION No. 4 N 157° E



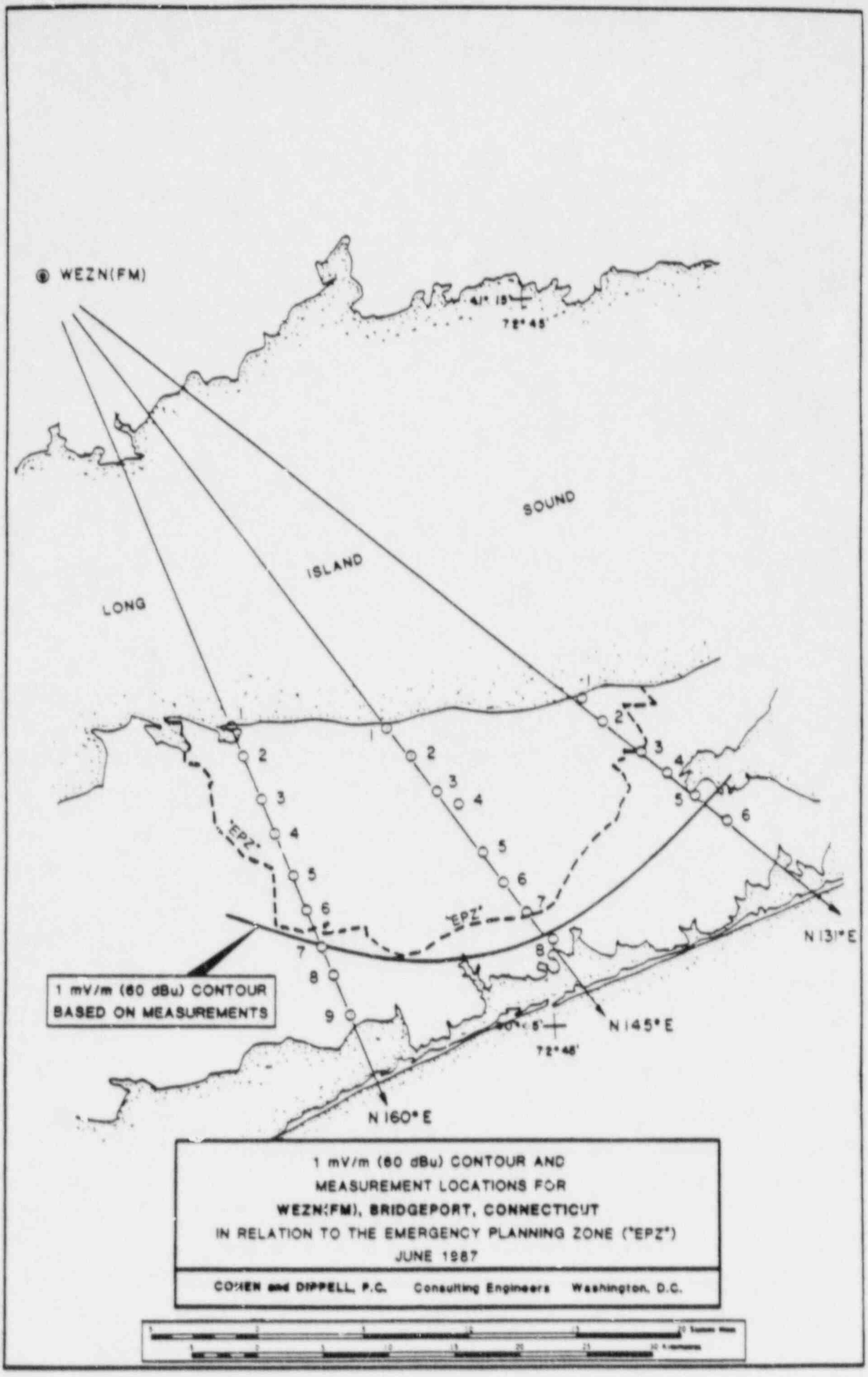
WEZN(FM) LOCATION No. 47 GRID



WPLR(FM) LOCATION No. 47 GRID

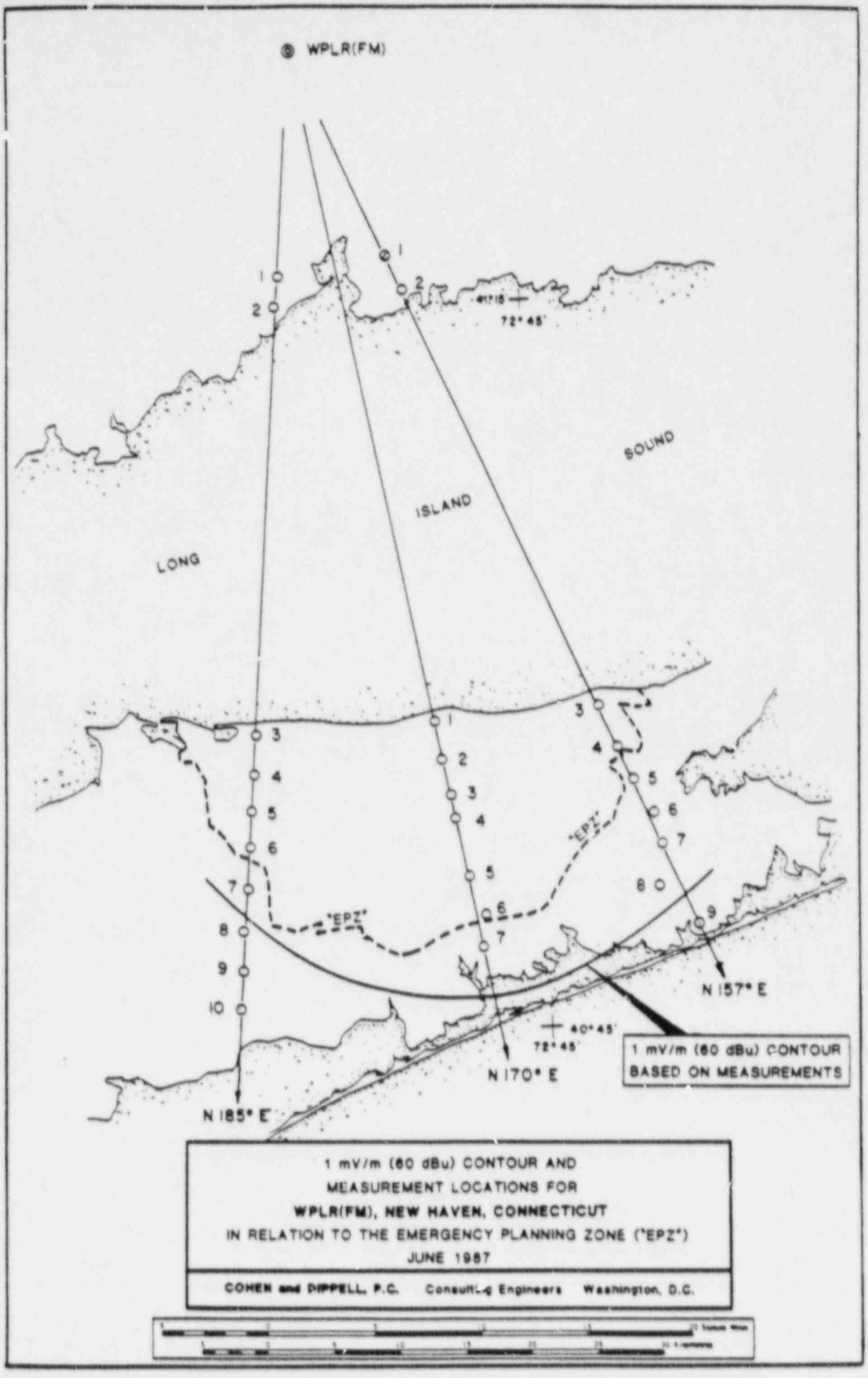
GRAPH OF RECORDED HORIZONTAL FIELD STRENGTH
WEZN(FM), BRIDGEPORT, CONNECTICUT
WPLR(FM), NEW HAVEN, CONNECTICUT
JUNE 1987

COHEN and DIPPELL, P. C. Consulting Engineers Washington, D. C.



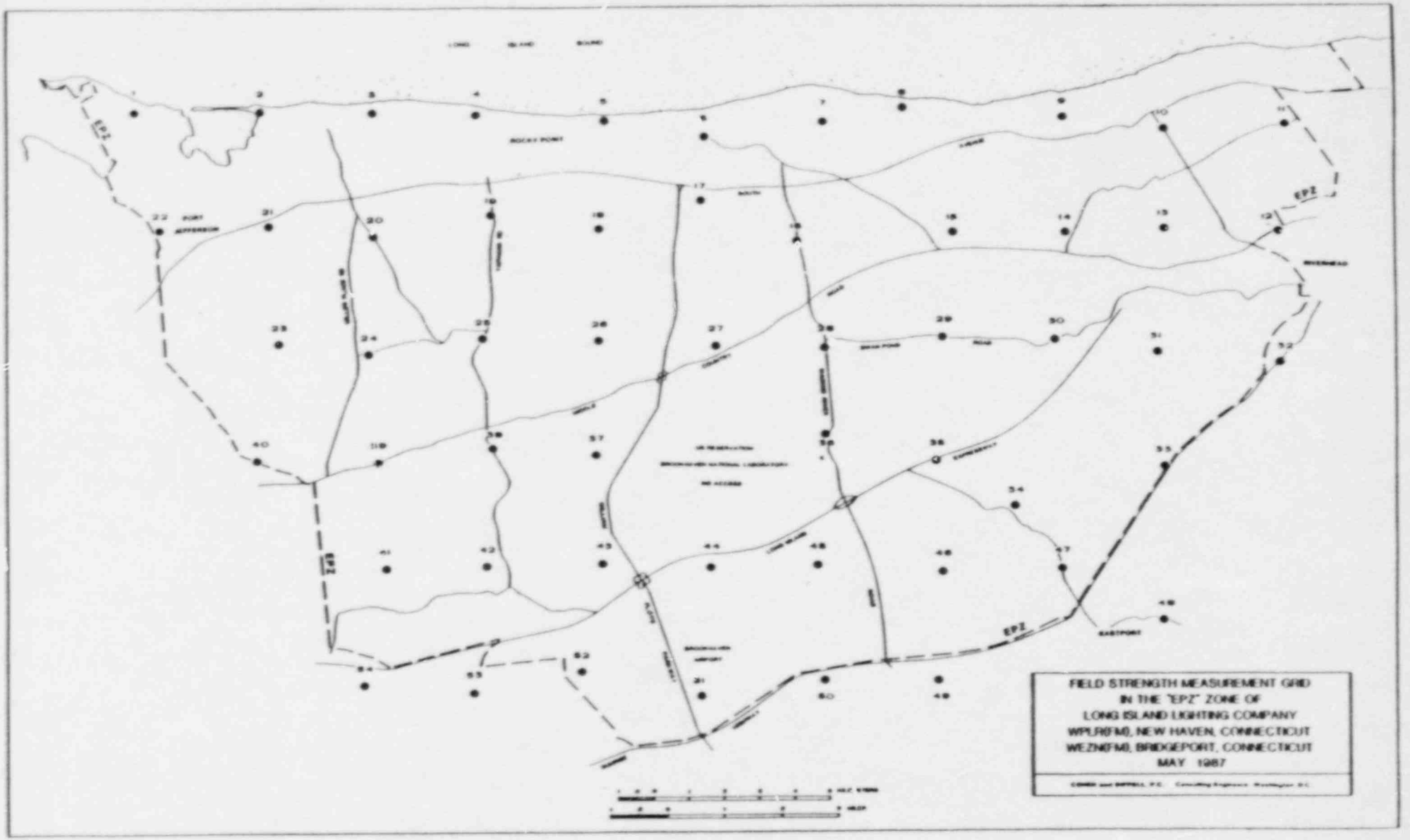
1 mV/m (60 dBu) CONTOUR AND
MEASUREMENT LOCATIONS FOR
WEZN(FM), BRIDGEPORT, CONNECTICUT
IN RELATION TO THE EMERGENCY PLANNING ZONE ("EPZ")
JUNE 1987

COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.



1 mV/m (60 dBu) CONTOUR AND
MEASUREMENT LOCATIONS FOR
WPLR(FM), NEW HAVEN, CONNECTICUT
IN RELATION TO THE EMERGENCY PLANNING ZONE ("EPZ")
JUNE 1987

COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.


EPZ
ROCKY POINT
PORT JEFFERSON
RIVERHEAD
EASTPORT
BROOKHAVEN NATIONAL LABORATORY
FIELD STRENGTH MEASUREMENT GRID
IN THE "EPZ" ZONE OF
LONG ISLAND LIGHTING COMPANY
WPLR(FM), NEW HAVEN, CONNECTICUT
WEZN(FM), BRIDGEPORT, CONNECTICUT
MAY 1987


N 157° E WPLR(FM)
N 185° E WPLR(FM)
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION
MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.


MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 157° E WPLR(FM)
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION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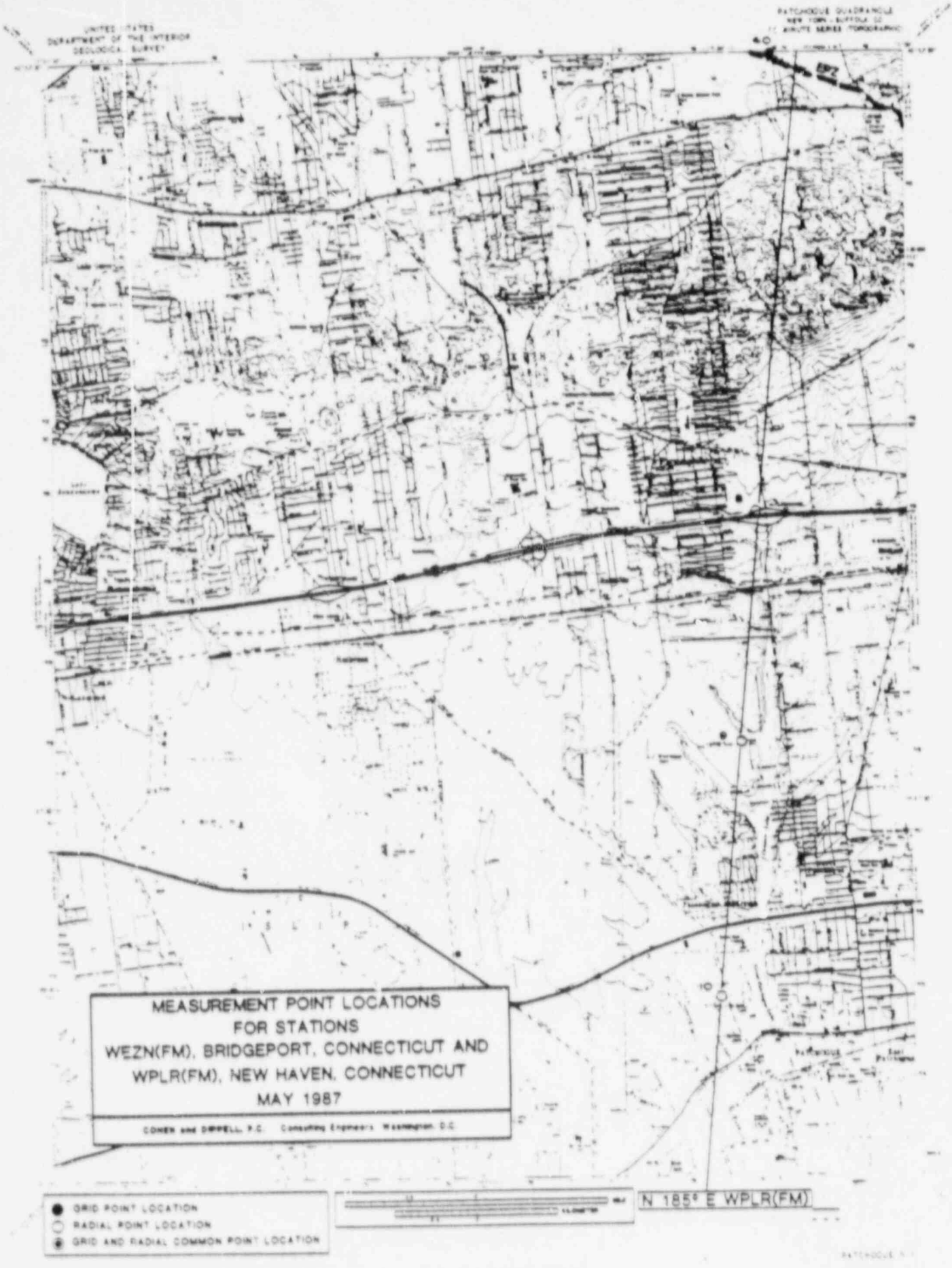
GEOLOGICAL SURVEY
PORT JEFFERSON QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
LONG ISLAND SOUND
PORT JEFFERSON HARBOR
EPZ
N 180° E WEZN(FM)
N 185° E WPLR(FM)
MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION


MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION
N 185° E WPLR(FM)

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GEOLOGICAL SURVEY

MIDDLE ISLAND QUADRANGLE
NEW YORK - SUFFOLK CO.
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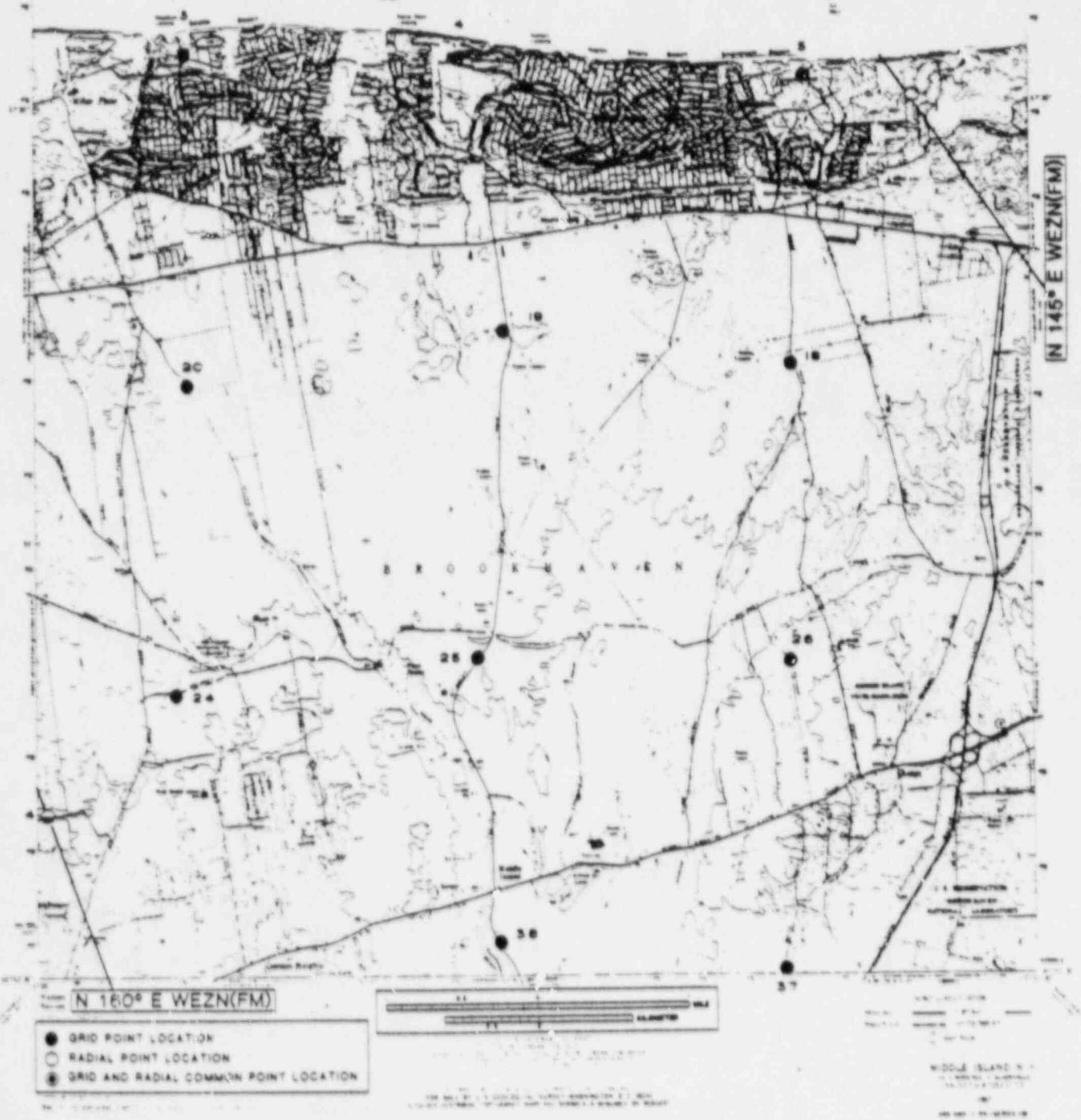
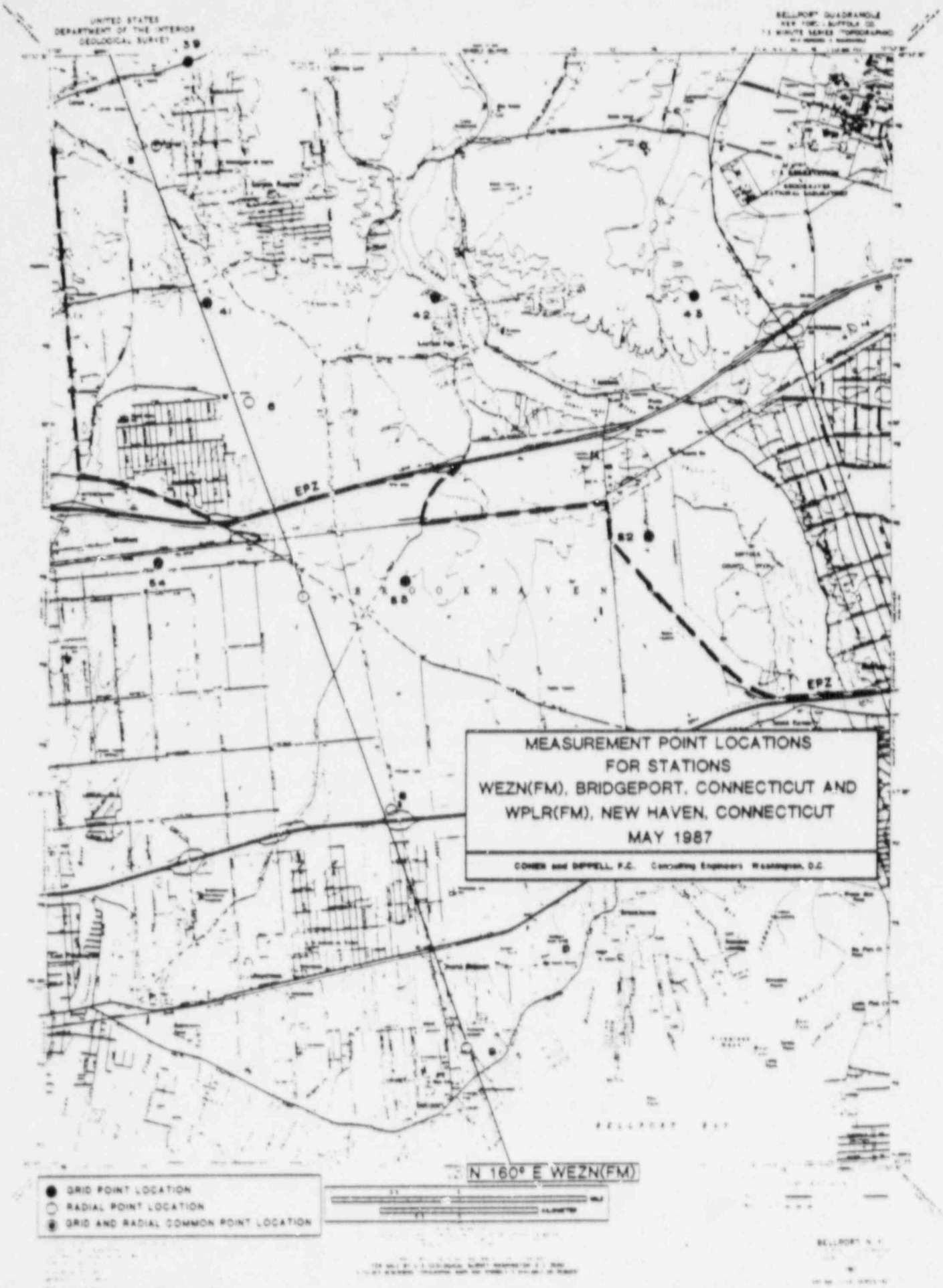
MEASUREMENT POINT LOCATIONS FOR STATIONS WEZN(FM), BRIDGEPORT, CONNECTICUT AND WPLR(FM), NEW HAVEN, CONNECTICUT MAY 1987

COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C




UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BELLPORT QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)
EPZ
EPZ
BROOKHAVEN
MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION
N 160° E WEZN(FM)

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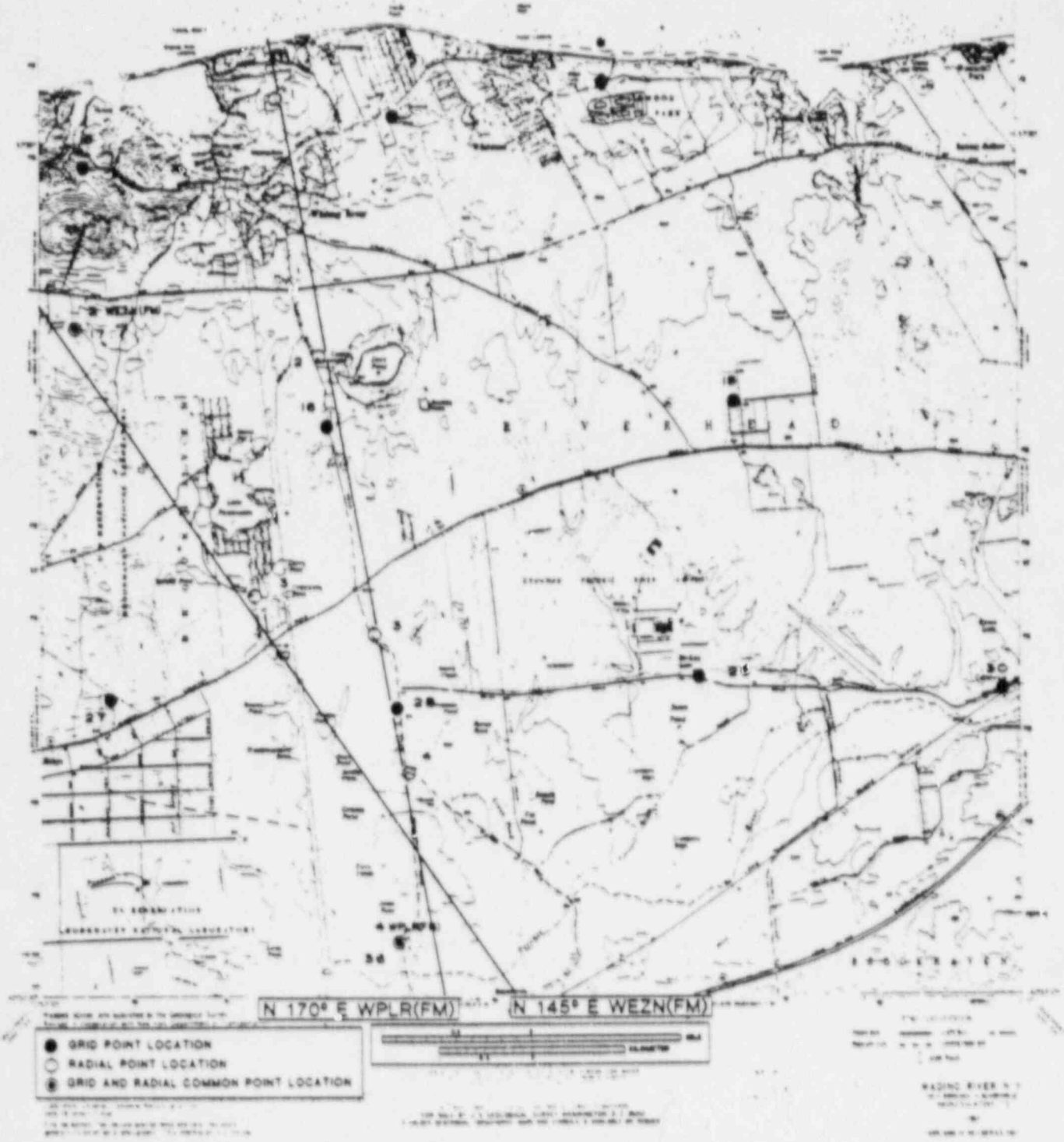
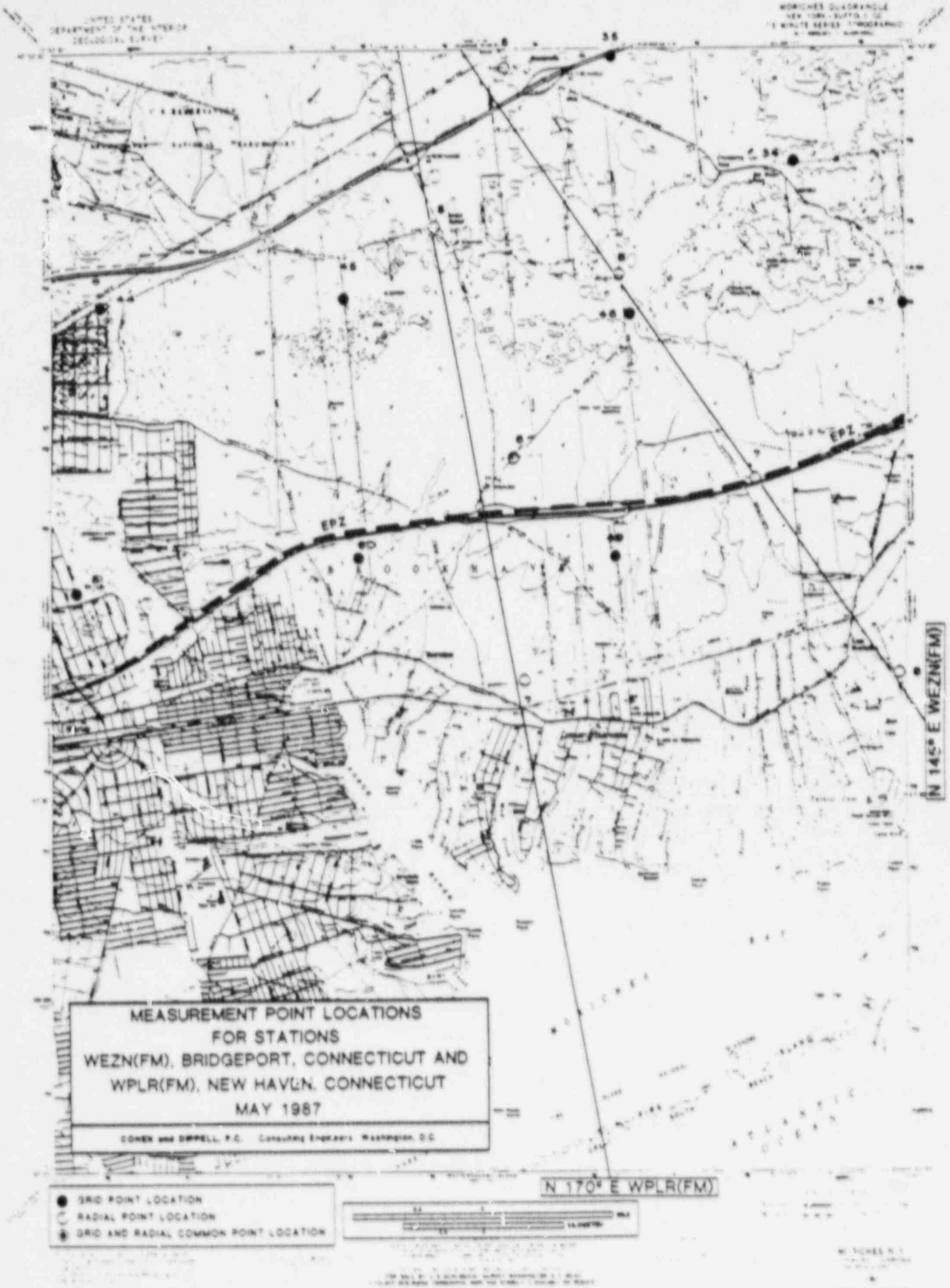
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

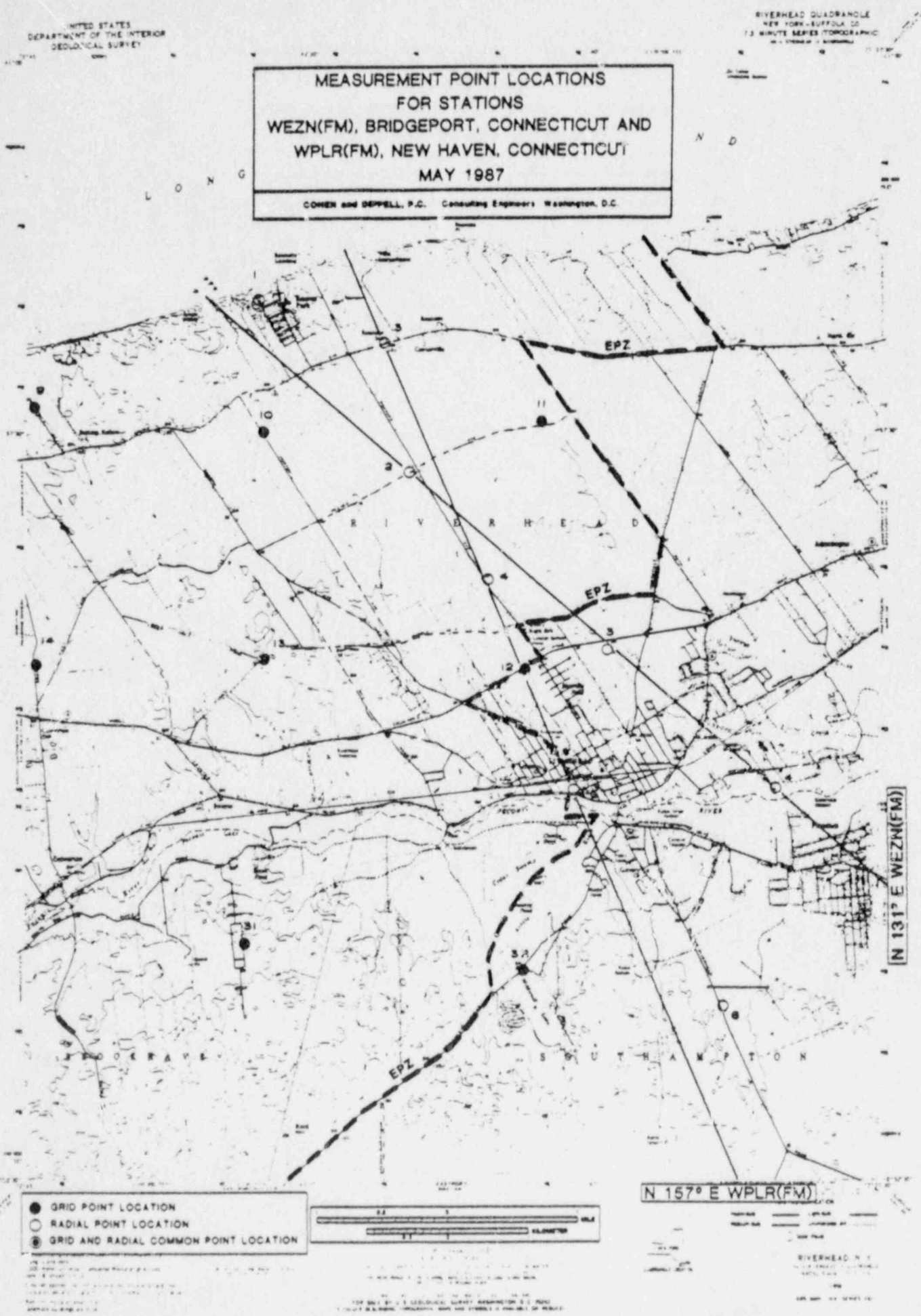
WADING RIVER QUADRANGLE
NEW YORK-SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

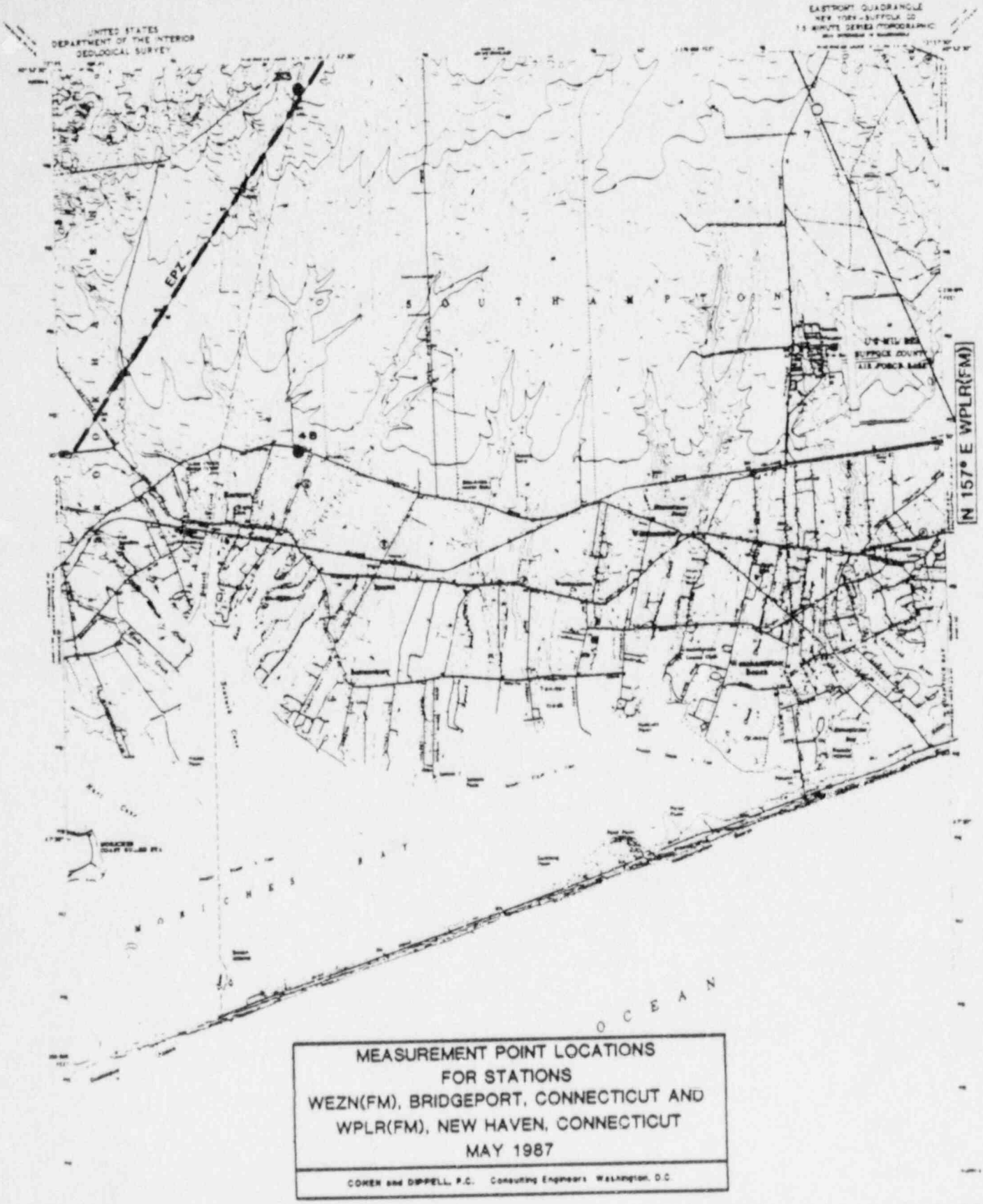
MEASUREMENT POINT LOCATIONS FOR STATIONS WEZN(FM), BRIDGEPORT, CONNECTICUT AND WPLR(FM), NEW HAVEN, CONNECTICUT MAY 1987

COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.




EPZ
EPZ
N 145° E WEZN(FM)
N 170° E WPLR(FM)
MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION

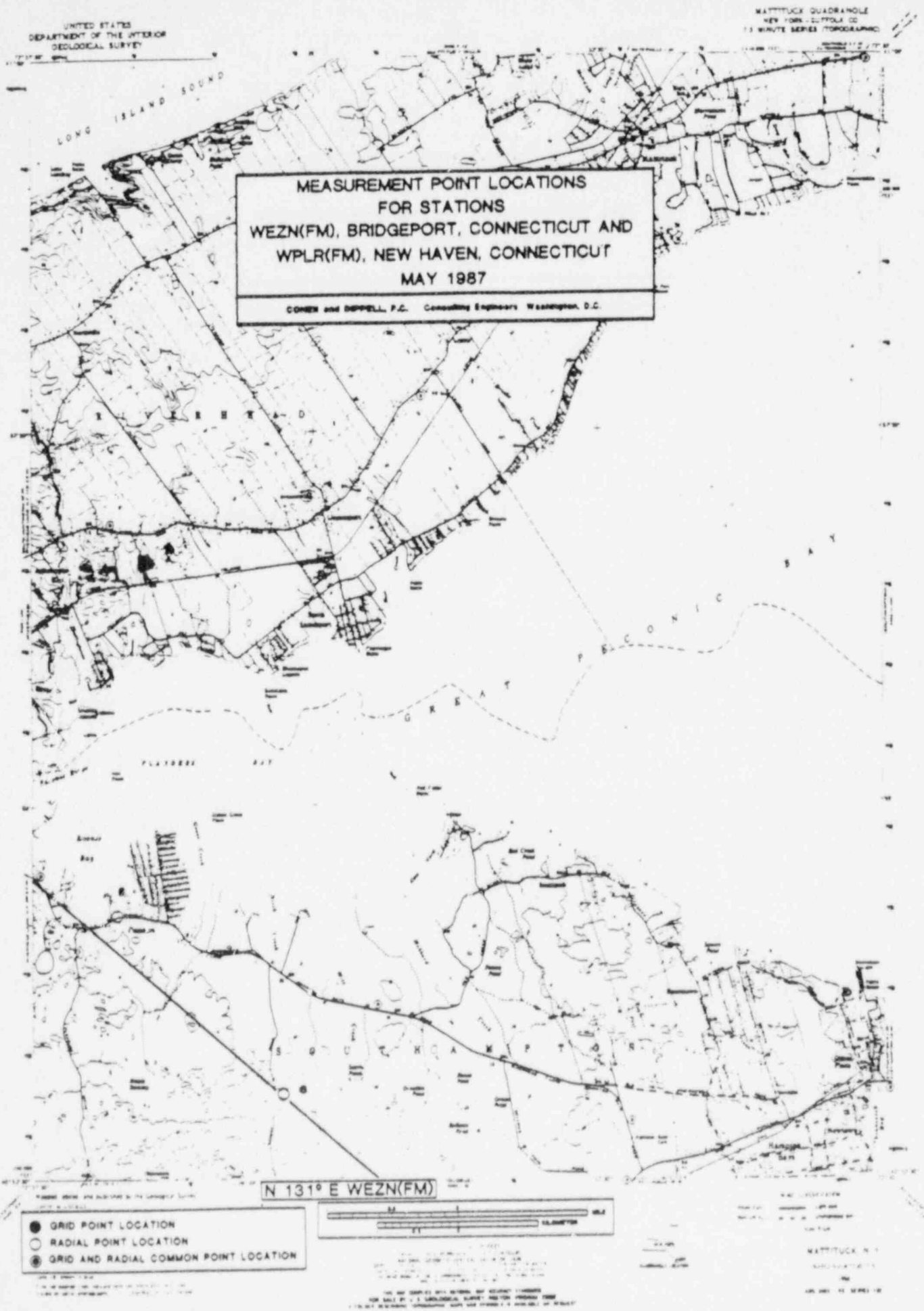

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
RIVERHEAD QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
L O N G
N D
EPZ
EPZ
EPZ
R I V E R H E A D
S O U T H A M P T O N
N 131° E WEZN(FM)
N 157° E WPLR(FM)
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION



MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987

COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C

- GRID POINT LOCATION
- RADIAL POINT LOCATION
- GRID AND RADIAL COMMON POINT LOCATION

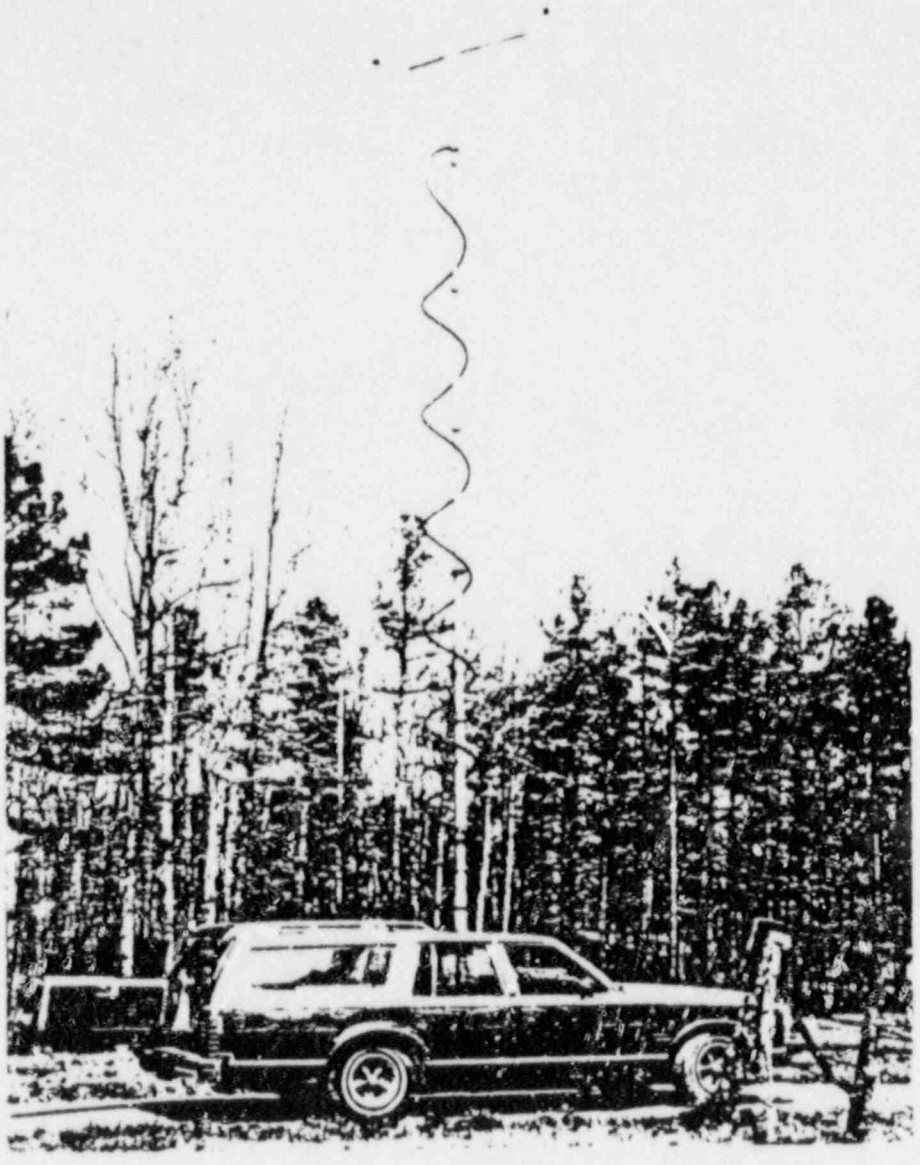

MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
N 131° E WEZN(FM)
GRID POINT LOCATION
RADIAL POINT LOCATION
GRID AND RADIAL COMMON POINT LOCATION

MEASUREMENT POINT LOCATIONS
FOR STATIONS
WEZN(FM), BRIDGEPORT, CONNECTICUT AND
WPLR(FM), NEW HAVEN, CONNECTICUT
MAY 1987

COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.

- GRID POINT LOCATION
- RADIAL POINT LOCATION
- GRID AND RADIAL COMMON POINT LOCATION

Cohen and Dippell, P.C.
Consulting Engineers
Washington, D.C. 20005



COHEN AND DIPPELL, P.C. FIELD CAR

WITH 30 FOOT TELESCOPING MAST

ATTACHMENT E

ATTACHMENT E

COHEN AND DIPPELL, P. C.

ENGINEERING REPORT RE
FIELD STRENGTH MEASUREMENT SURVEY
OF RADIO STATION WINS, NEW YORK, NEW YORK
1010 KHZ 50 KW DA-1
AND WELI, NEW HAVEN, CONNECTICUT
960 KHZ 5 KW DA-N
FOR LONG ISLAND LIGHTING COMPANY
JUNE 1987

COHEN AND DIPPELL, P. C.

City of Washington)
)ss
District of Columbia)

Ralph E. Dippell, Jr., being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and Vice President of Cohen and Dippell, P.C., Consulting Engineers, Radio - Television, with offices at 1015 15th Street, N.W., Suite 703, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

That the attached engineering report was prepared by him or under his supervision and direction and;

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts, he believes them to be true.

Ralph E. Dippell, Jr.
Ralph E. Dippell, Jr.
District of Columbia
Professional Engineer
Registration No. 1385

Subscribed and sworn to before me this 8th day of July, 1987.

Notary Public
My Commission Expires

This engineering report has been prepared on behalf of Long Island Lighting Company (LILCO) to provide the results of field strength measurements conducted in a specific area on radio stations WINS, New York, New York, and WELI, New Haven, Connecticut. The purpose of the field strength measurements was to determine the distance to certain field strength contours of WINS and WELI in relation to the Emergency Planning Zone (EPZ) area associated with the LILCO power facility at Shoreham, New York.

WINS is licensed to operate on 1010 kHz with a power level of 50 kW and utilizing the same directional antenna system for both day and night. Under the FCC Rules WINS is classified as a Class II station and operates with the maximum permissible power for its class of AM stations. Class II stations are protected to their 0.5 mV/m groundwave contour during daytime from interference caused by co-channel and adjacent channel stations. During the nighttime operation they are afforded protection to the 2.5 mV/m groundwave contour from co-channel and adjacent channel stations.

WELI operates on 960 kHz with a nominal power level of 5 kW and utilizes a non-directional antenna system for its daytime operation and a directional antenna system for the nighttime operation. Under the FCC Rules WELI is designated as a Class

III regional channel station and operates with the maximum permissible power (5 kW) allowed for Class III stations.

Class III stations are protected to their 0.5 mV/m groundwave contour during daytime from interference caused by co-channel and adjacent channel stations. During nighttime they are normally protected to their 2.5 mV/m contour from co-channel stations. WELI's calculated nighttime RSS interference-free contour is 3.6 mV/m. This value is based on the interfering signals of co-channel stations and is based on the 50% exclusion method as described in the FCC Rules.

The WELI measurements were made by Robert W. Guill, and the WINS measurements were made by Sudhir K. Khanna of Cohen and Dippell, P.C. All measurements were made in accordance with Section 73.186 of the FCC Rules (Code of Federal Regulations 47). Two Potomac Instruments field strength meters were utilized: Type FIM-21, Serial Number 385 calibrated by the manufacturer on April 16, 1987, and FIM-41, Serial Number 117 calibrated by the manufacturer on September 12, 1986. The two meters were compared and found to be in close agreement.

An analysis of the WINS field strength measurements on the 87 degree radial shows WINS provides a maximum signal level of 0.97 mV/m and a minimum signal level of 0.48 mV/m to the EPZ area. Based on the measured radial method for determining AM

service, the WINS 0.5 mV/m contour extends to a distance of approximately 120 kilometers from the WINS transmitter site. The distance to other contours can be determined by reference to the attached WINS graph of field strength versus distance.

A similar analysis of the WELI field strength measurements shows during daytime, WELI provides a maximum signal level of 5.7 mV/m and a minimum signal level of 0.68 mV/m, and during nighttime WELI provides a maximum signal level of 11 mV/m and a minimum signal level of 1.2 mV/m to the EPZ area.

The 0.5 mV/m signal is the FCC required signal strength for primary service to rural areas and communities with population less than 2500 people. The 0.5 mV/m contour of WELI serves the entire EPZ area, and the 0.5 mV/m contour of WINS serves most of EPZ only missing the eastern portion by approximately three kilometers. However, a signal strength of 2 mV/m is required by the FCC Rules to serve communities with population in excess of 2500 persons including "Census Designated Places" (CDP's). The EPZ consists of numerous CDP's and communities with population in excess of 2500 people.

The WINS transmitter site is located in the Meadowlands, Lyndhurst, New Jersey. The field strength measurements were made beginning at the WINS transmitter site on a bearing of N 87°E and continued through the EPZ area to a location north

of Southampton approximately 127 kilometers from the WINS transmitter site.

This report includes a tabulation of the WINS field strength measurements for the N 87°E radial which shows the point number, distance from the transmitter in kilometers, the date and time, and the 30 kW directional field strength in mV/m. WINS was operating under a special temporary authority from the FCC during the period the field strength measurements were conducted. Under the special temporary authority, WINS was operating with reduced power (30 kW) to prevent interference while making minor adjustments to its directional radiation pattern to the west or in the minimum (null) area of the WINS directional pattern. The contour shown reflects WINS operating at its normal licensed power of 50 kW.

In addition tabulations of the WELI field strength measurements are provided for the N 162°E, N 172.5°E, and N 187°E radials. The tabulations show the point number, distance from the transmitter in kilometers, the date and time, and the 5 kW non-directional field strength in mV/m for each location.

The values of measured field strength were plotted against distance on log-log graph paper to determine the inverse distance field. These plotted points were then compared to the

theoretical curves of field strength versus distance, and the curve closest fitting the data were drawn on the attached graph. The set of theoretical curves for this comparison is Graph 11 (WELI) and Graph 12 (WINS) of Section 73.184 of the FCC Rules.

The graph of field strength versus distance and maps showing the measurement point locations are attached to this report. In addition a coverage map has been included showing the measured 0.5 mV/m and 2 mV/m contours of WINS and WELI and the nighttime interference-free contour of WELI in relation to the EPZ area.

COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WINS, NEW YORK, NEW YORK
1010 KHZ 50 KW DA-1
JUNE 1987

N 85°E

Number	Distance km	Date	Time	Directional* Field Strength mV/m
1	0.69	6/3	0927	6000
2	0.73	"	0925	5800
3	2.11	"	0905	1220
4	2.16	"	1011	2600
5	2.33	"	1010	1800
6	2.46	"	1015	1320
7	2.60	"	1018	1370
8	2.62	6/4	1616	1410
9	2.76	6/3	1028	1450
10	2.84	"	1029	1290
11	2.86	6/4	1543	1220
12	2.88	"	1544	1240
13	3.21	6/3	1034	890
14	3.78	6/4	1624	760
15	6.45	6/3	1112	495
16	7.15	"	1057	375
17	7.54	"	1053	292
18	8.04	"	1127	238

COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WINS, NEW YORK, NEW YORK
1010 KHZ 50 KW DA-1
JUNE 1987

N 85°E

Number	Distance km.	Date	Time	Directional* Field Strength mV/m
19	8.96	6/3	1136	279
20	9.58	"	1156	227
21	9.95	"	1201	176
22	12.06	"	1227	347
23	12.17	"	1223	175
24	13.00	"	1237	130
25	14.02	"	1244	95
26	15.01	"	1252	46.5
27	15.90	"	1301	48.5
28	17.08	"	1307	41.5
29	17.85	"	1314	33.5
30	18.90	"	1320	36.0
31	19.98	"	1338	37.5
32	21.12	"	1345	21.2
33	22.08	"	1349	19.5
34	23.25	"	1506	22.7
35	24.15	"	1501	33.5
36	24.97	"	1516	27.9

COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WINS, NEW YORK, NEW YORK
1010 KHZ 50 KW DA-1
JUNE 1987

N 85°E

Number	Distance km	Date	Time	Directional* Field Strength mV/m
37	29.92	6/3	1611	23.5
38	31.10	"	1603	16.8
39	34.20	"	1708	18.2
40	35.70	"	1648	15.8
41	37.60	"	1725	13.8
42	41.50	"	1746	8.8
43	43.55	"	1752	5.3
44	45.20	6/4	1359	3.7
45	47.10	6/3	1800	2.32
46	50.10	"	1805	2.10
47	52.90	6/4	1345	1.73
48	55.0	"	1338	1.85
49	57.2	"	1332	2.02
50	59.2	"	1322	1.69
51	62.5	"	1309	1.95
52	65.5	"	1301	1.94
53	66.7	6/4	1255	1.40
54	68.9	"	1246	1.08

COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WINS, NEW YORK, NEW YORK
1010 KHZ 50 KW DA-1
JUNE 1987

N 85°E

Number	Distance km	Date	Time	Directional* Field Strength mV/m
55	70.5	6/4	1240	1.88
56	73.4	"	1228	1.32
57	76.5	"	1221	0.90
58	79.2	"	1213	1.02
59	82.0	"	1207	0.96
60	85.0	"	1158	0.81
61	88.0	"	1149	0.75
62	90.8	"	1143	0.79
63	93.4	"	1138	0.67
64	95.0	"	1133	0.75
65	95.4	"	1130	0.59
66	96.8	"	1120	0.58
67	98.9	"	1102	0.54
68	101.4	"	1056	0.375
69	102.3	"	1051	0.48
70	108.0	"	1040	0.51
71	109.5	"	1034	0.535
72	111.6	"	1030	0.50

COHEN AND DIPPELL, P. C.

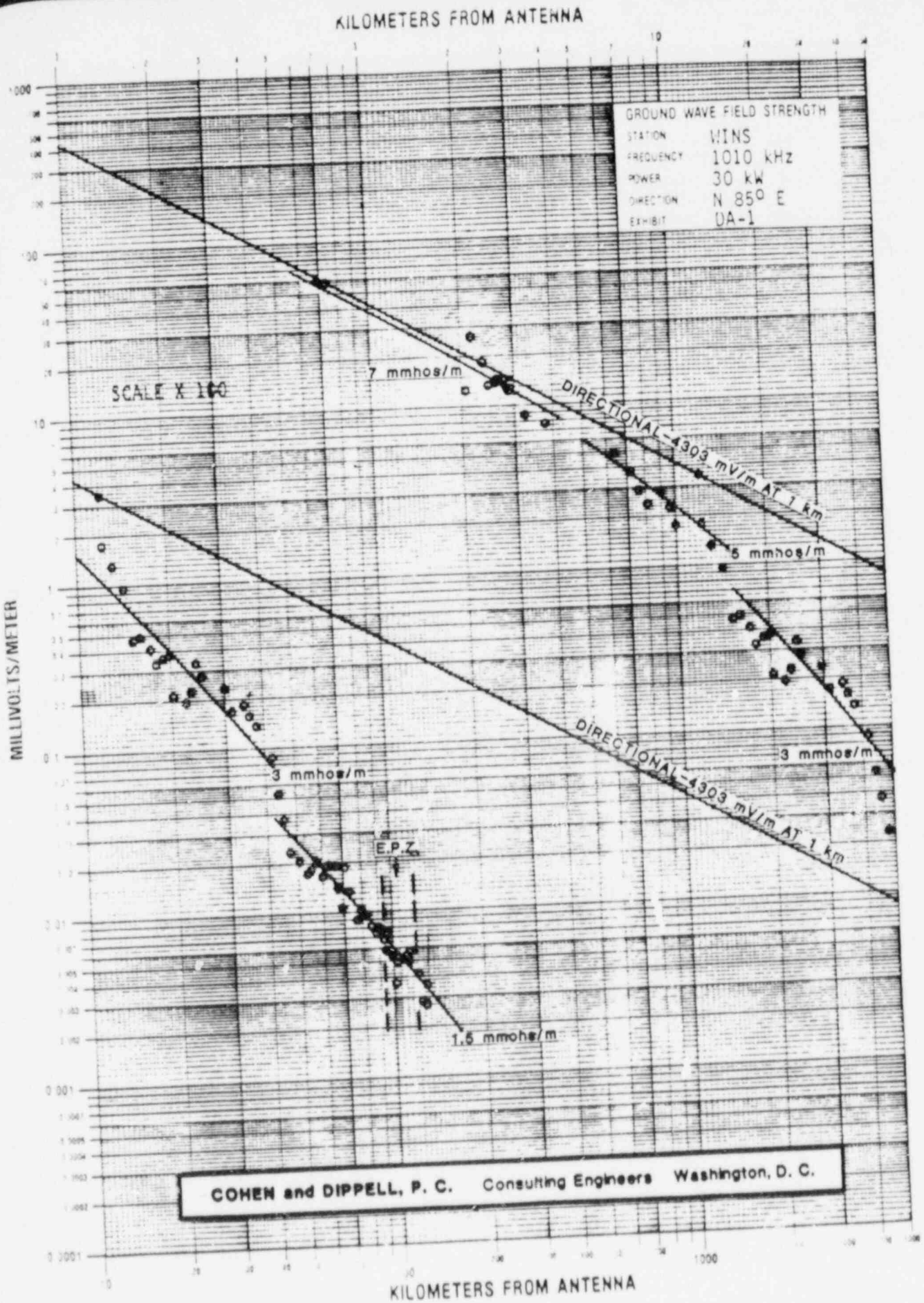
TABULATION OF
FIELD STRENGTH MEASUREMENTS
WINS, NEW YORK, NEW YORK
1010 KHZ 50 KW DA-1
JUNE 1987

N 85°E

Number	Distance km	Date	Time	Directional* Field Strength mV/m
73	112.0	6/4	1026	0.56
74	119.4	"	1009	0.42
75	123.7	"	0929	0.28
76	125.7	"	0937	0.275
77	127.3	"	0951	0.35

* WINS operating at reduced power (30 kW) under FCC STA dated October 10, 1986.

Measured by Sudhir K. Khanna utilizing a Potomac Instruments field intensity meter, Type FIM-41 (SN 117) calibrated by the manufacturer on September 12, 1986.


KILOMETERS FROM ANTENNA
GROUND WAVE FIELD STRENGTH
STATION WINS
FREQUENCY 1010 kHz
POWER 30 kW
DIRECTION N 85° E
EXHIBIT DA-1
SCALE X 100
7 mmhos/m
DIRECTIONAL-4303 mV/m AT 1 km
5 mmhos/m
3 mmhos/m
3 mmhos/m
DIRECTIONAL-4903 mV/m AT 1 km
E.P.Z.
1.5 mmhos/m
MILLIVOLTS/METER
COHEN and DIPPELL, P. C. Consulting Engineers Washington, D. C.
KILOMETERS FROM ANTENNA

COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WELI, NEW HAVEN, CONNECTICUT
960 KHZ 5 KW ND
JUNE 1987

N 162°E*

Number	Distance km	Date	Time	Non-Directional Field Strength mV/m
1	0.21	1/10/79	1331	2490
2	0.42	"	1335	1100
3	0.64	"	1340	680
4	0.79	"	1343	745
5	0.90	"	1346	570
6	1.13	"	1350	388
7	1.29	"	1352	350
8	1.61	"	1354	287
9	2.06	"	1358	254
10	2.74	"	1407	206
11	2.90	"	1410	155
12	3.09	"	1413	182
13	3.23	"	1415	107
14	4.01	"	1418	122
15	4.91	"	1424	86
16	5.66	"	1429	68

COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WELI, NEW HAVEN, CONNECTICUT
960 KHZ 5 KW ND
JUNE 1987

N 162°E

Number	Distance km	Date	Time	Non-Directional Field Strength mV/m
17	6.63	1/10/79	1437	81.4
18	7.22	"	1442	43.5
19	8.21	"	1448	25.8
20	9.41	"	1509	44
21	10.47	"	1516	23
22	11.26	"	1520	23.5
23	12.07	"	1524	18.2
24	12.87	"	1528	25.8
25	13.92	"	1538	22
1	47.2	6/4/87	1420	5.70
2	48.3	"	1410	2.83
3	49.7	"	1405	2.25
4	52.1	"	1400	1.50
5	54.4	"	1358	1.40
6	54.7	"	1354	1.50
7	59.3	"	1336	0.73

COHEN AND DIPPELL, P. C.

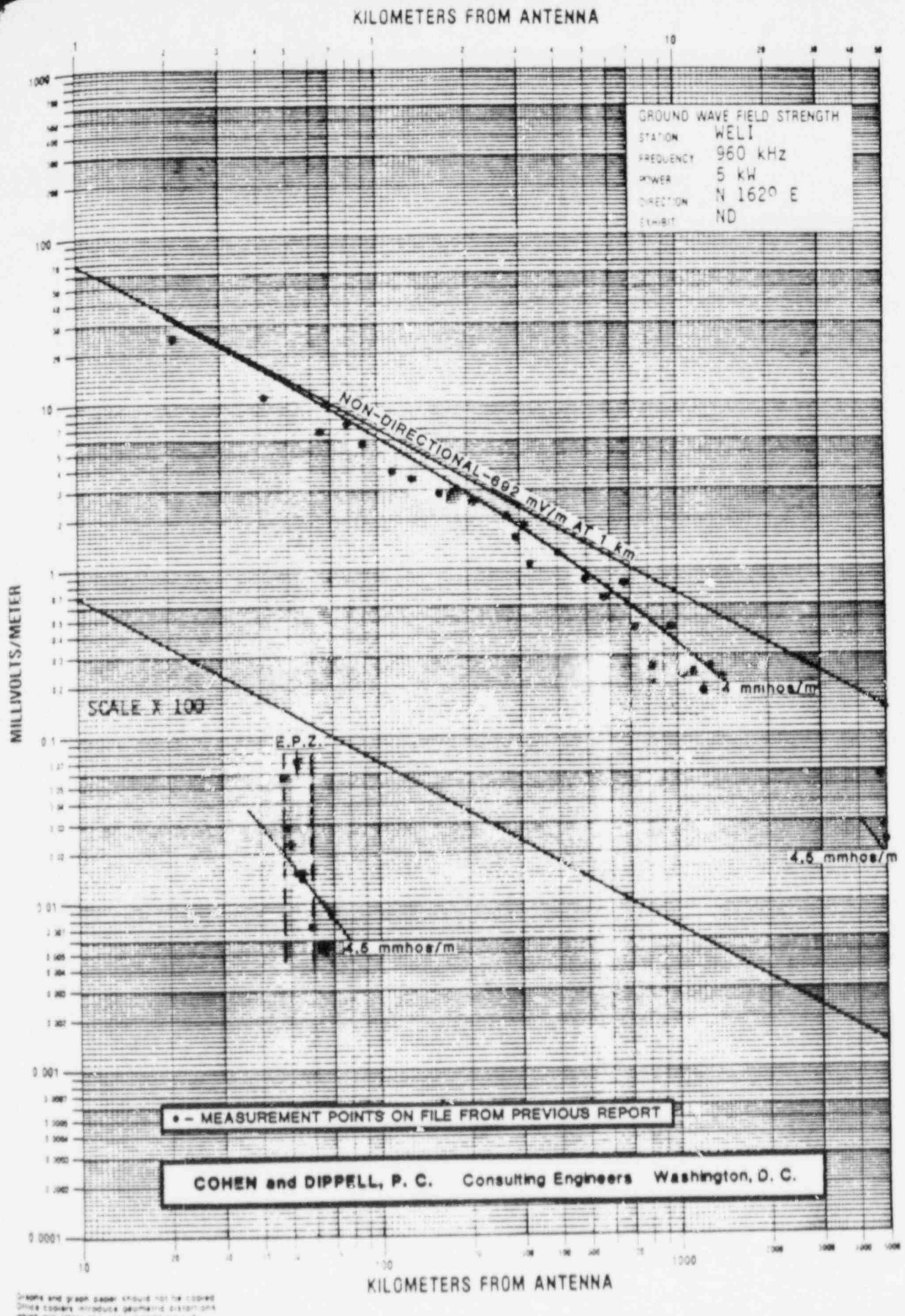
TABULATION OF FIELD STRENGTH MEASUREMENTS WELI, NEW HAVEN, CONNECTICUT 960 KHZ 5 KW ND JUNE 1987

N 162°E

Number	Distance km	Date	Time	Non-Directional Field Strength mV/m
8	62.8	6/4/87	1326	0.57
9	64.2	"	1322	0.54
10	65.8	"	1315	0.55
11	68.5	"	1256	0.88

* Data extracted from WELI engineering report entitled "Antenna Proof-of-Performance, WELI, 5 kW-U, DA-N, 960 kHz, Insilco Broadcasting Corporation, New Haven, Connecticut" contained in the WELI FCC broadcast license file.

Point locations 1 through 11 dated June 4, 1987, measured by Robert W. Guill utilizing a Potomac Instruments field intensity meter, Type FIM-21 (SN 385) calibrated by the manufacturer on April 16, 1987.


KILOMETERS FROM ANTENNA
GROUND WAVE FIELD STRENGTH
STATION WELI
FREQUENCY 960 kHz
POWER 5 kW
DIRECTION N 162° E
EXHIBIT ND
NON-DIRECTIONAL-692 mV/m AT 1 km
4 mmhos/m
SCALE X 100
E.P.Z.
4.6 mmhos/m
4.6 mmhos/m
MILLIVOLTS/METER
• – MEASUREMENT POINTS ON FILE FROM PREVIOUS REPORT
COHEN and DIPPELL, P. C. Consulting Engineers Washington, D. C.
KILOMETERS FROM ANTENNA

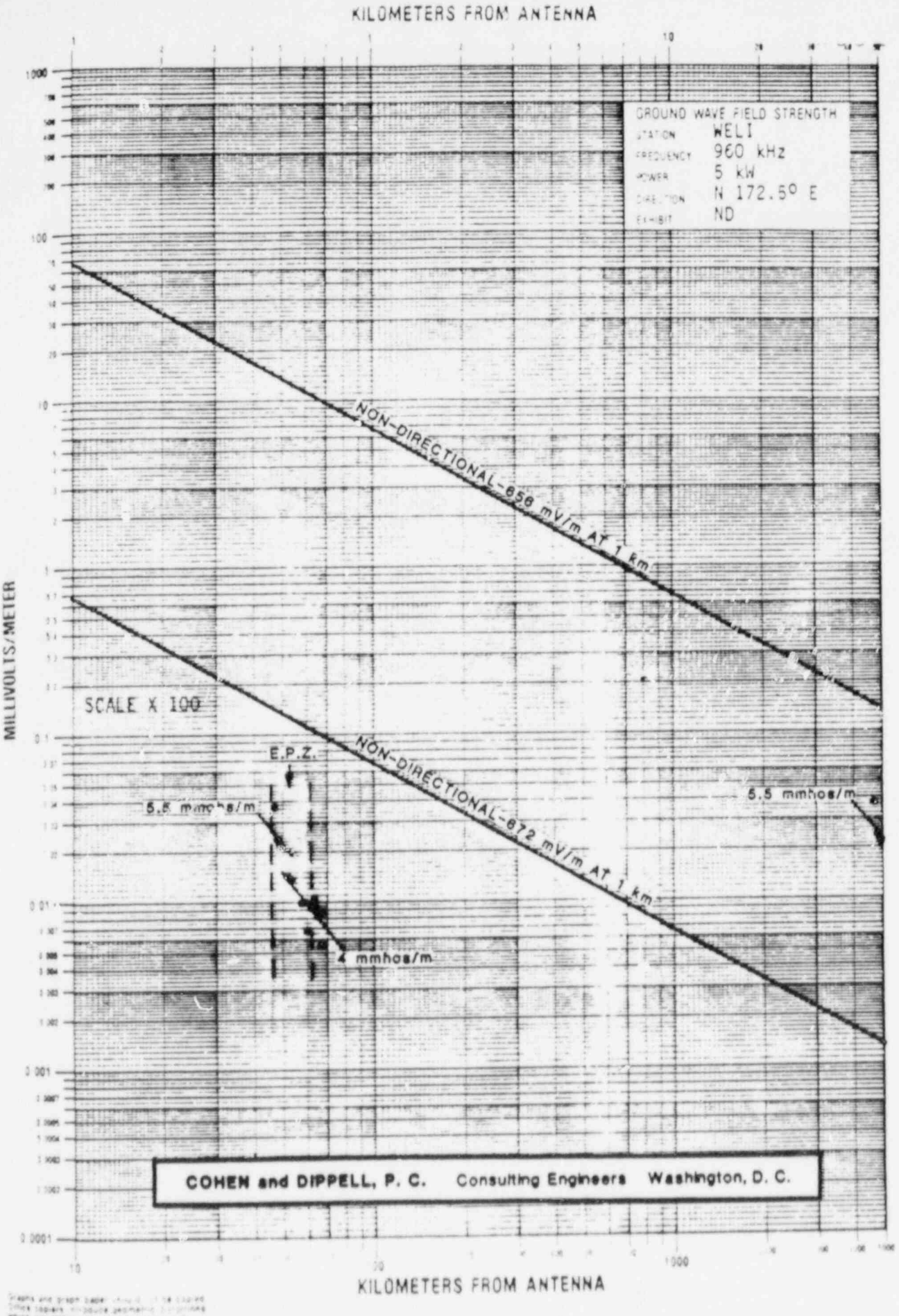
COHEN AND DIPPELL, P. C.

TABULATION OF
FIELD STRENGTH MEASUREMENTS
WELI, NEW HAVEN, CONNECTICUT
960 KHZ 5 KW ND
JUNE 1987

N 172.5°E

Number	Distance km	Date	Time	Non-Directional Field Strength mV/m
1	46.7	6/3	1601	3.70
2	47.7	"	1555	2.35
3	49.1	"	1540	2.15
4	52.1	"	1530	1.40
5	52.9	"	1532	1.35
6	57.6	"	1628	0.98
7	60.6	"	1635	0.68
8	61.8	"	1640	0.92
9	63.2	"	1648	1.05
10	64.4	"	1702	0.93
11	65.4	"	1712	0.83
12	66.4	"	1717	0.55
13	68.6	"	1727	0.88

Measured by Robert W. Guill utilizing a Potomac Instruments field intensity meter, Type FIM-21 (SN 385) calibrated by the manufacturer on April 16, 1987.


KILOMETERS FROM ANTENNA
GROUND WAVE FIELD STRENGTH
STATION WELI
FREQUENCY 960 kHz
POWER 5 kW
DIRECTION N 172.5° E
EXHIBIT ND
NON-DIRECTIONAL-858 mV/m AT 1 km
NON-DIRECTIONAL-872 mV/m AT 1 km
SCALE X 100
E.P.Z.
5.5 mmhos/m
5.5 mmhos/m
4 mmhos/m
MILLIVOLTS/METER
COHEN and DIPPELL, P. C. Consulting Engineers Washington, D. C.
KILOMETERS FROM ANTENNA

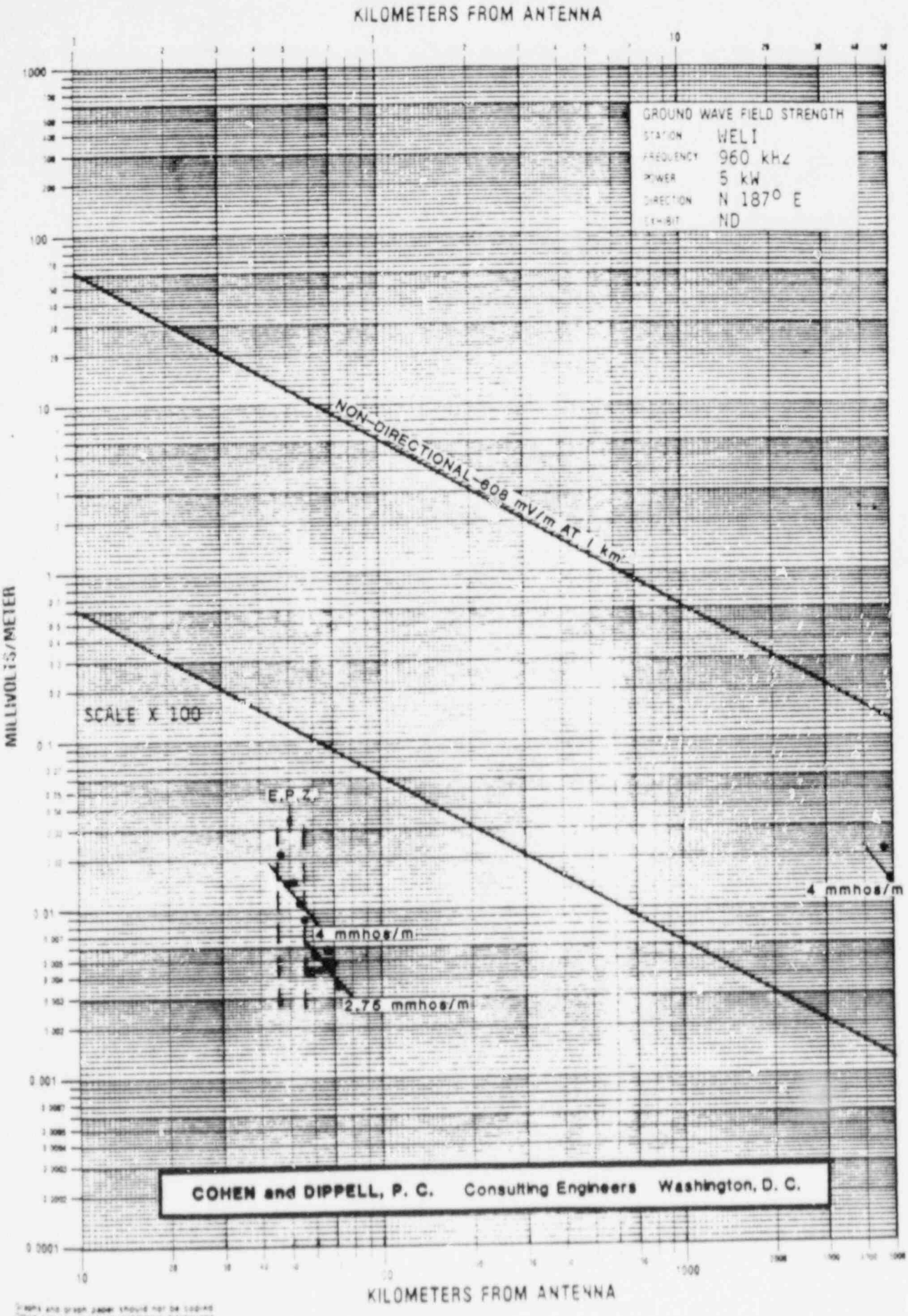
COHEN AND DIPPELL, P. C.

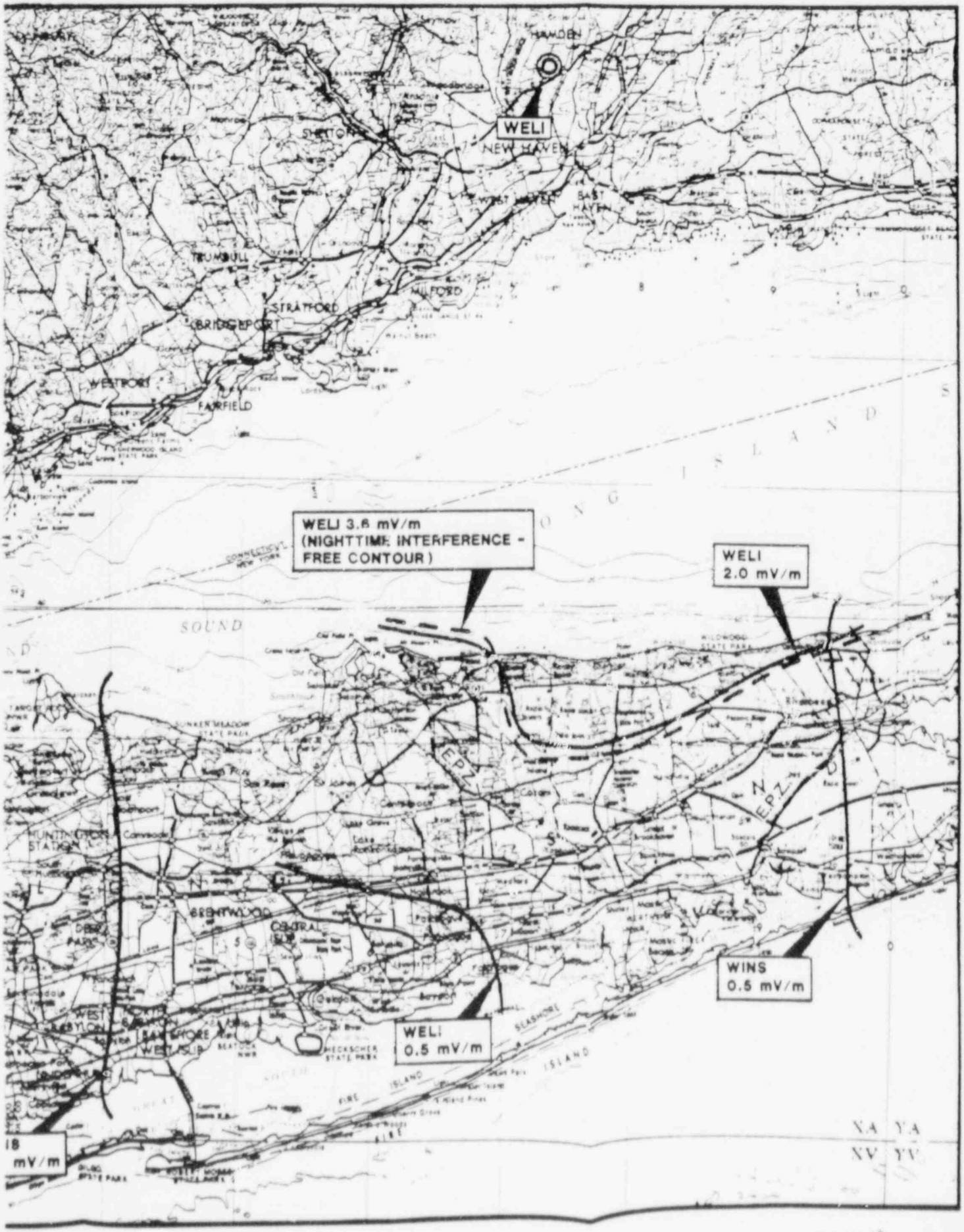
TABULATION OF
FIELD STRENGTH MEASUREMENTS
WELI, NEW HAVEN, CONNECTICUT
960 KHZ 5 KW ND
JUNE 1987

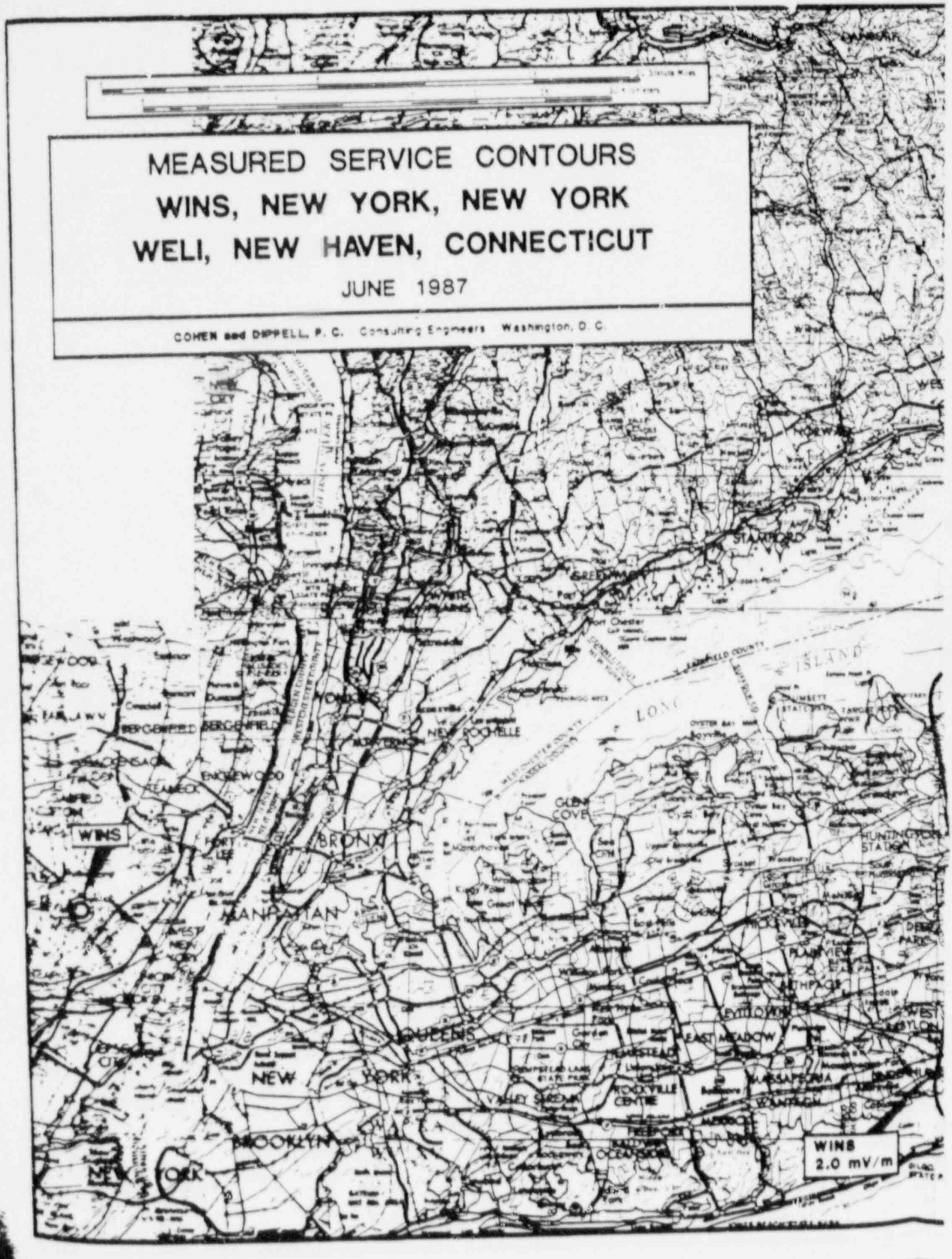
N 187°E

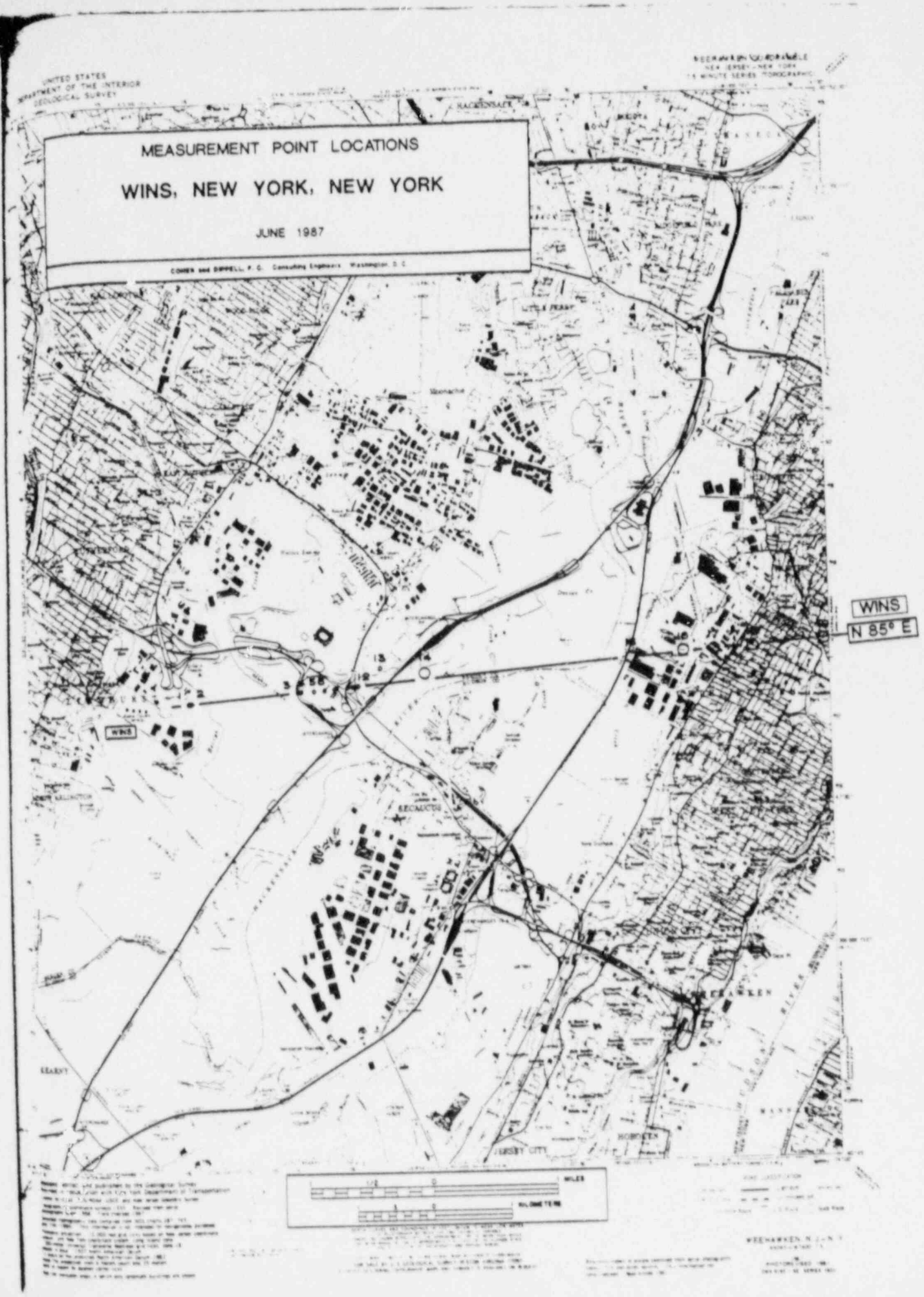
Number	Distance km	Date	Time	Non-Directional Field Strength mV/m
1	46.2	6/3	1225	2.15
2	48.3	"	1215	1.40
3	51.0	"	1206	1.45
4	53.6	"	1158	1.10
5	56.1	"	1146	0.88
6	58.4	"	1140	0.43
7	60.8	"	1130	0.54
8	62.3	"	1120	0.44
9	64.6	"	1055	0.48
10	66.3	"	1040	0.58
11	68.1	"	1030	0.45
12	69.8	"	1018	0.48
13	71.6	"	1012	0.35

Measured by Robert W. Guill utilizing a Potomac Instruments field intensity meter, Type FIM-21 (SN 385) calibrated by the manufacturer on April 16, 1987.

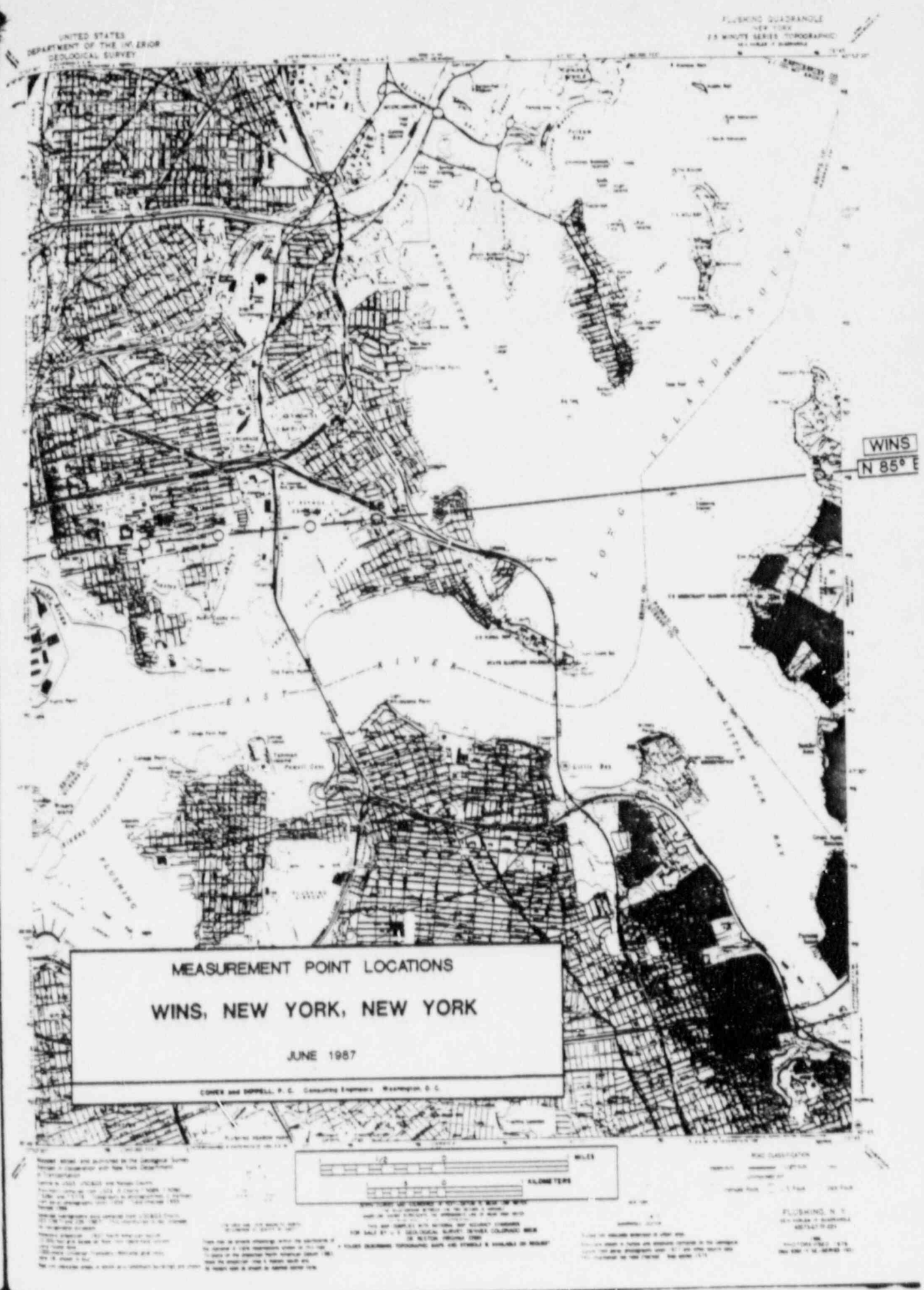

KILOMETERS FROM ANTENNA
GROUND WAVE FIELD STRENGTH
STATION WELI
FREQUENCY 960 kHz
POWER 5 kW
DIRECTION N 187° E
EXHIBIT ND
NON-DIRECTIONAL-608 mV/m AT 1 km
SCALE X 100
E.P.Z.
4 mmhos/m
4 mmhos/m
2.75 mmhos/m
MILLIVOLTS/METER
COHEN and DIPPELL, P. C. Consulting Engineers Washington, D. C.
KILOMETERS FROM ANTENNA


WELI
NEW HAVEN
WELI 3.6 mV/m
(NIGHTTIME INTERFERENCE - FREE CONTOUR)
WELI
2.0 mV/m
WINS
0.5 mV/m
WELI
0.5 mV/m
EPZ
N EPZ
SOUND
LONG ISLAND
BRIDGEPORT
STRATFORD
MILFORD
WESTPORT
FAIRFIELD
TRUMBULL
HAMDEN
BRENTWOOD
CENTRAL ISLIP
HUNTINGTON STATION
SEAFORD
FIRE ISLAND

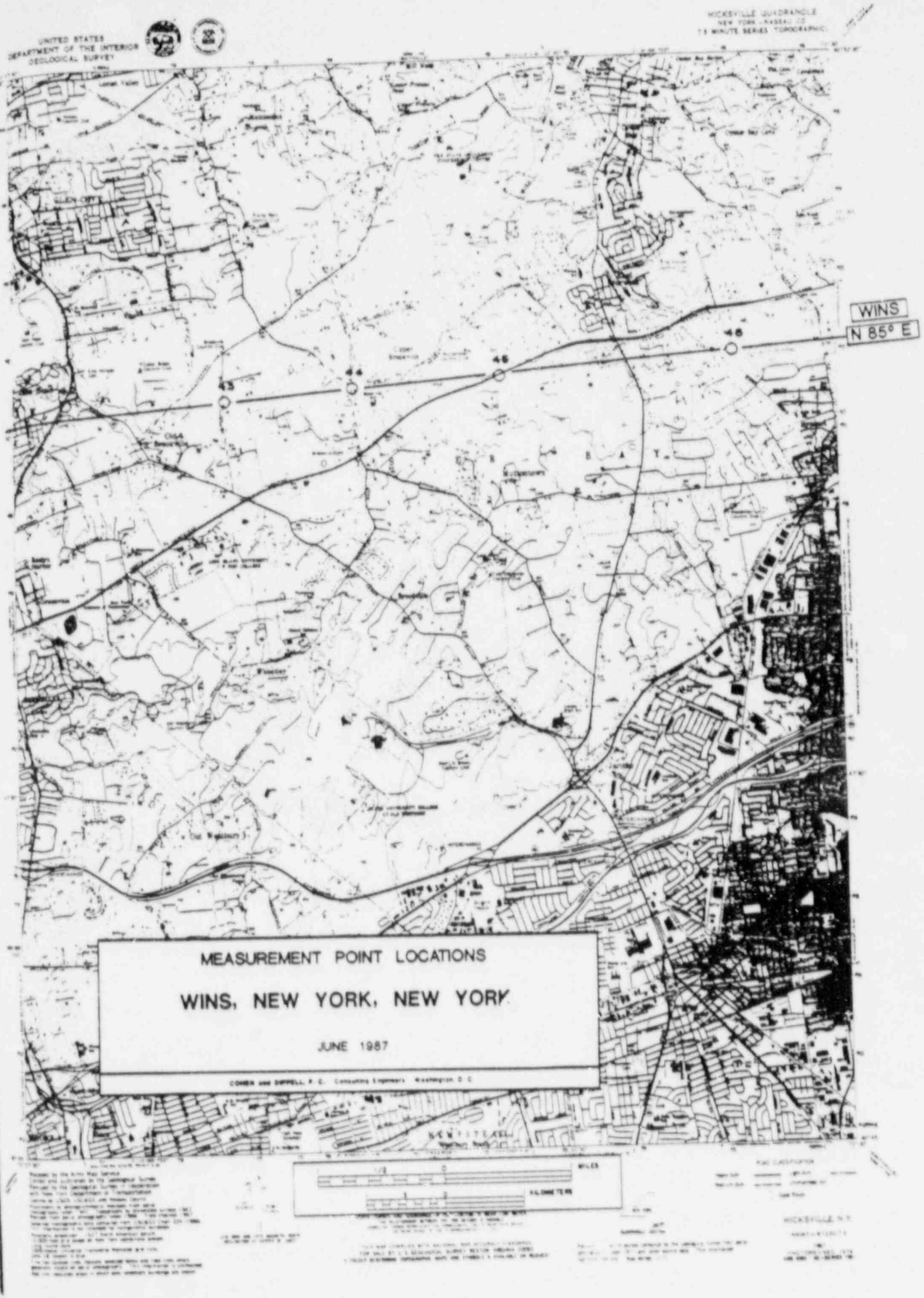

MEASURED SERVICE CONTOURS
WINS, NEW YORK, NEW YORK
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
COHEN and DIPPELL, P. C. Consulting Engineers Washington, D. C.
WINS
BRONX
MANHATTAN
QUEENS
NEW YORK
BROOKLYN
STAMFORD
NEW ROCHELLE
GLEN COVE
HUNTINGTON STATION
EAST MEADOW
WINS
2.0 mV/m

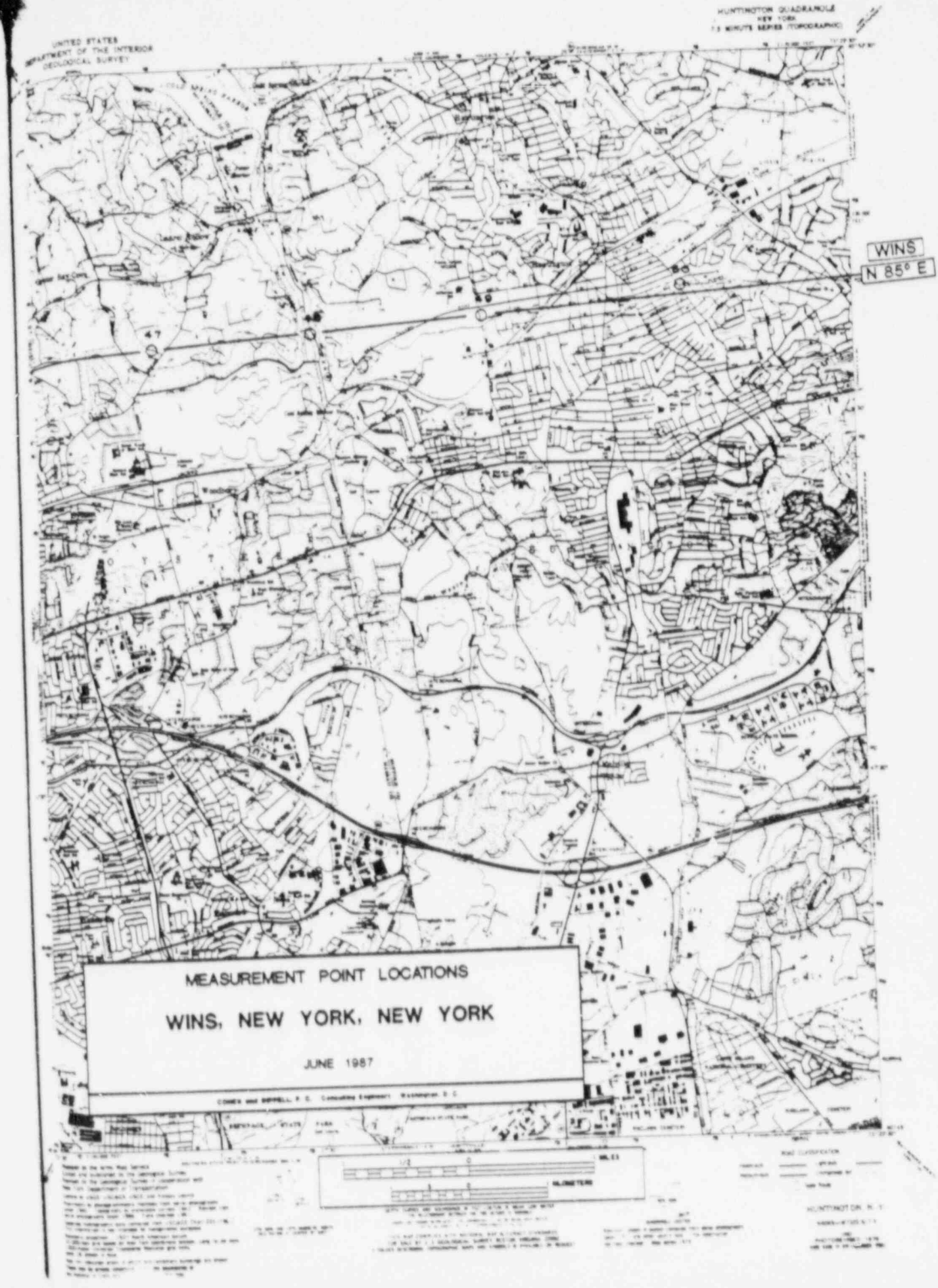

MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
WINS
N 85° E
WINS


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CENTRAL PARK QUADRANGLE
NEW YORK - NEW JERSEY
7.5 MINUTE SERIES (TOPOGRAPHIC)
WINS
N 85° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
CENTRAL PARK, N.Y. - N.J.

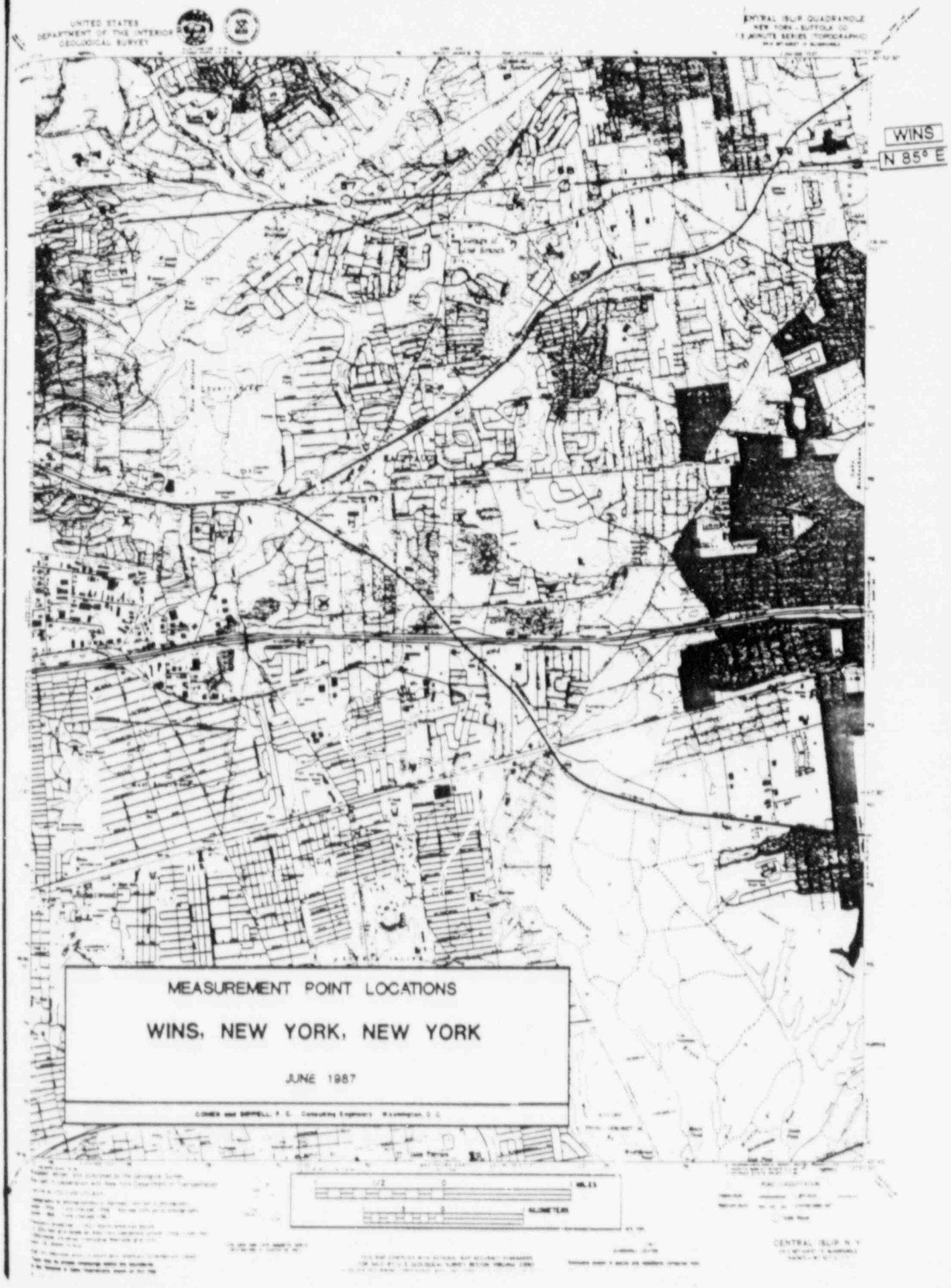

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WINS
N 85° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SEA CLIFF QUADRANGLE
NEW YORK
MINUTE SERIES (TOPOGRAPHIC)
LONG ISLAND SOUND
WINS
N 85° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
COMSAT and SERRELL, P.C. Consulting Engineers Washington, D.C.
MILES
KILOMETERS
SEA CLIFF, N.Y.

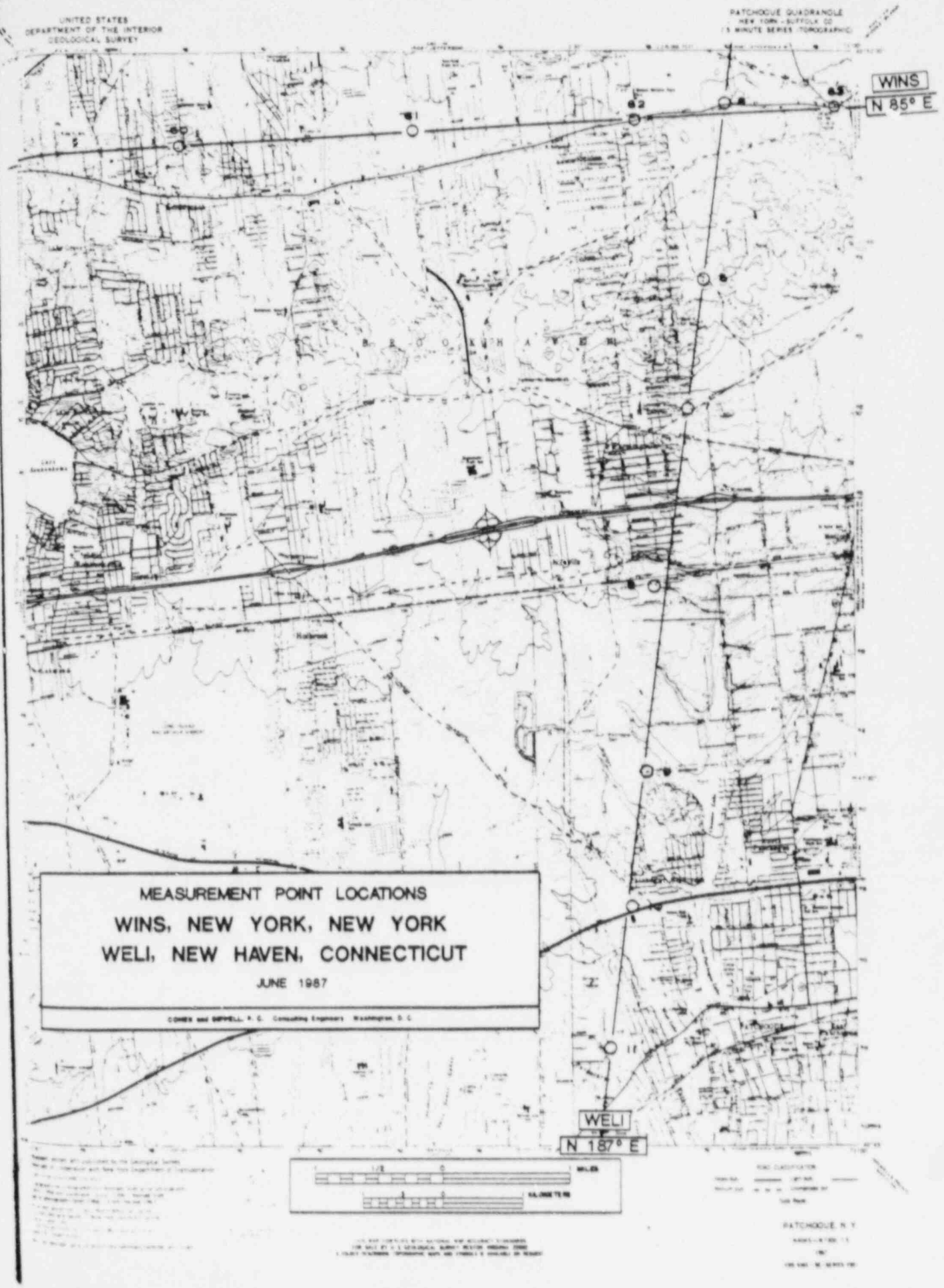

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
HICKSVILLE QUADRANGLE
NEW YORK - NASSAU CO.
7.5 MINUTE SERIES TOPOGRAPHIC
WINS
N 85° E
43
44
45
46
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.
HICKSVILLE, N.Y.

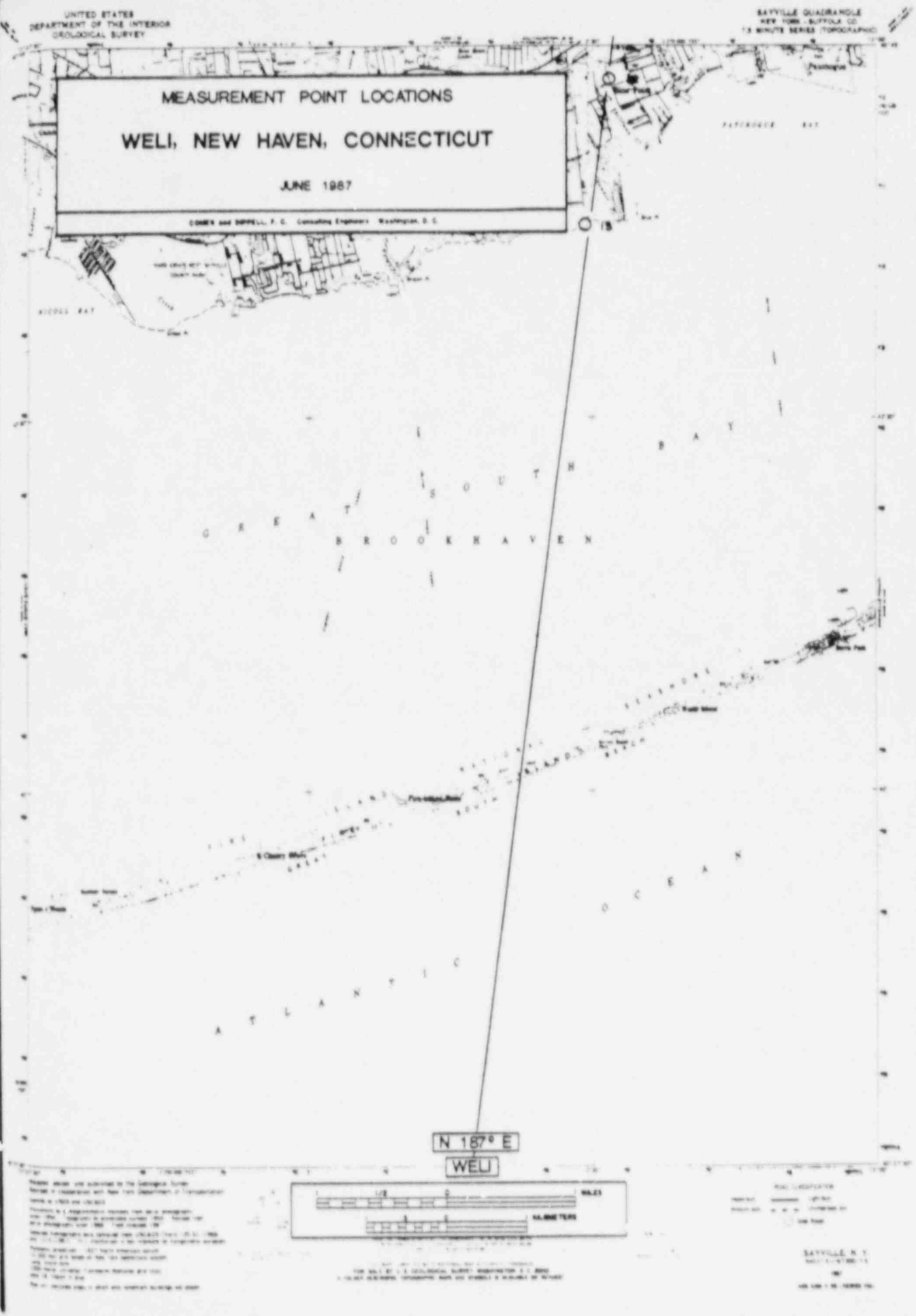

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
HUNTINGTON QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)
WINS
N 85° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987

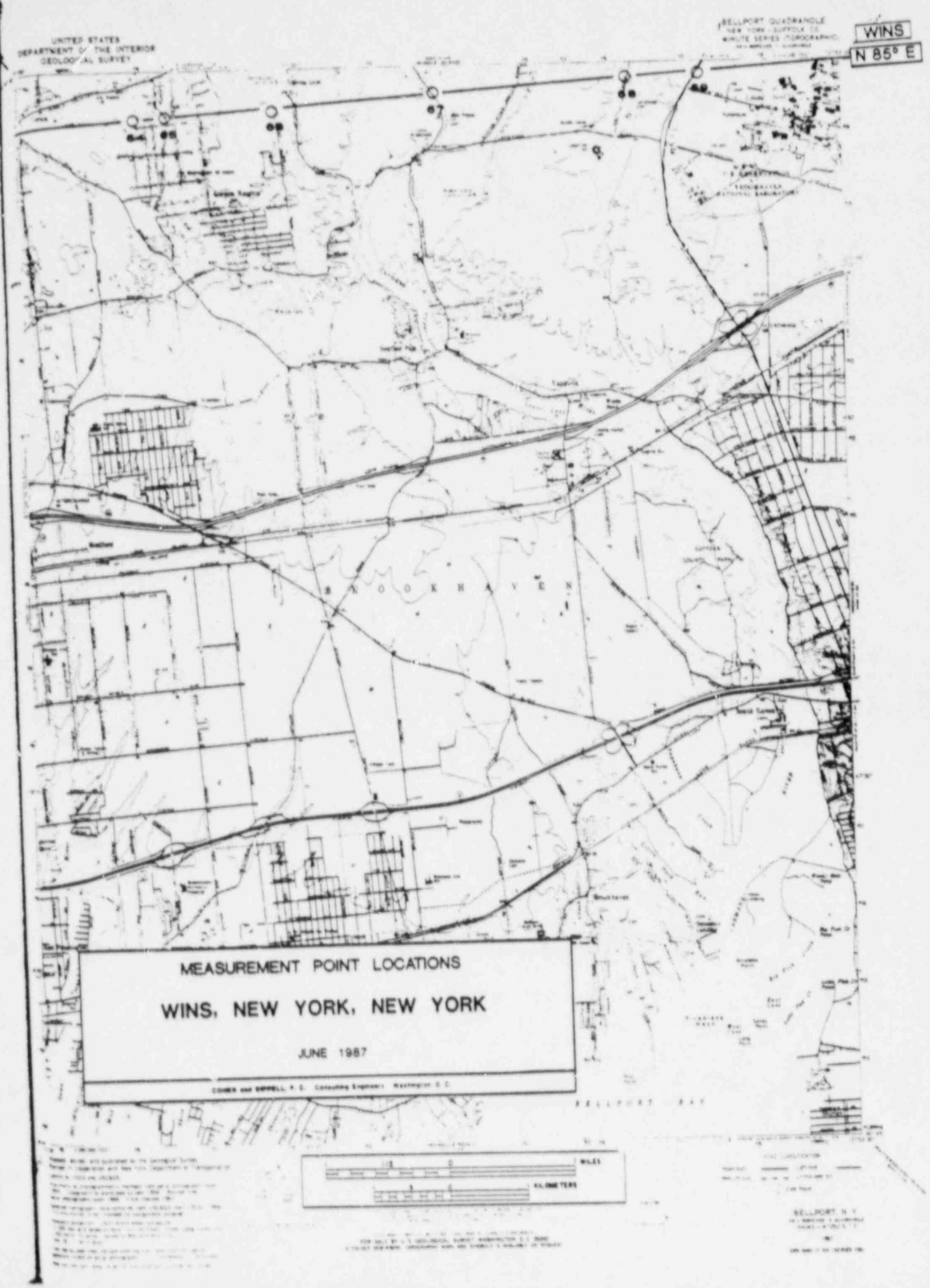

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
GREENLAWN QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
WINS
N 85° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
COMSIS and BIPPELL, P.C. Consulting Engineers Washington, D.C.
GREENLAWN, N.Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CENTRAL ISLIP QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES TOPOGRAPHIC
WINS
N 85° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
COHEN and SEIFERT, P. C. Consulting Engineers Washington, D. C.
MILES
KILOMETERS
CENTRAL ISLIP, N.Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
PORT JEFFERSON QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
L O N G I S L A N D S O U N D
PORT JEFFERSON HARBOR
MEASUREMENT POINT LOCATIONS
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
WELI
N 187° E
PORT JEFFERSON, N. Y.

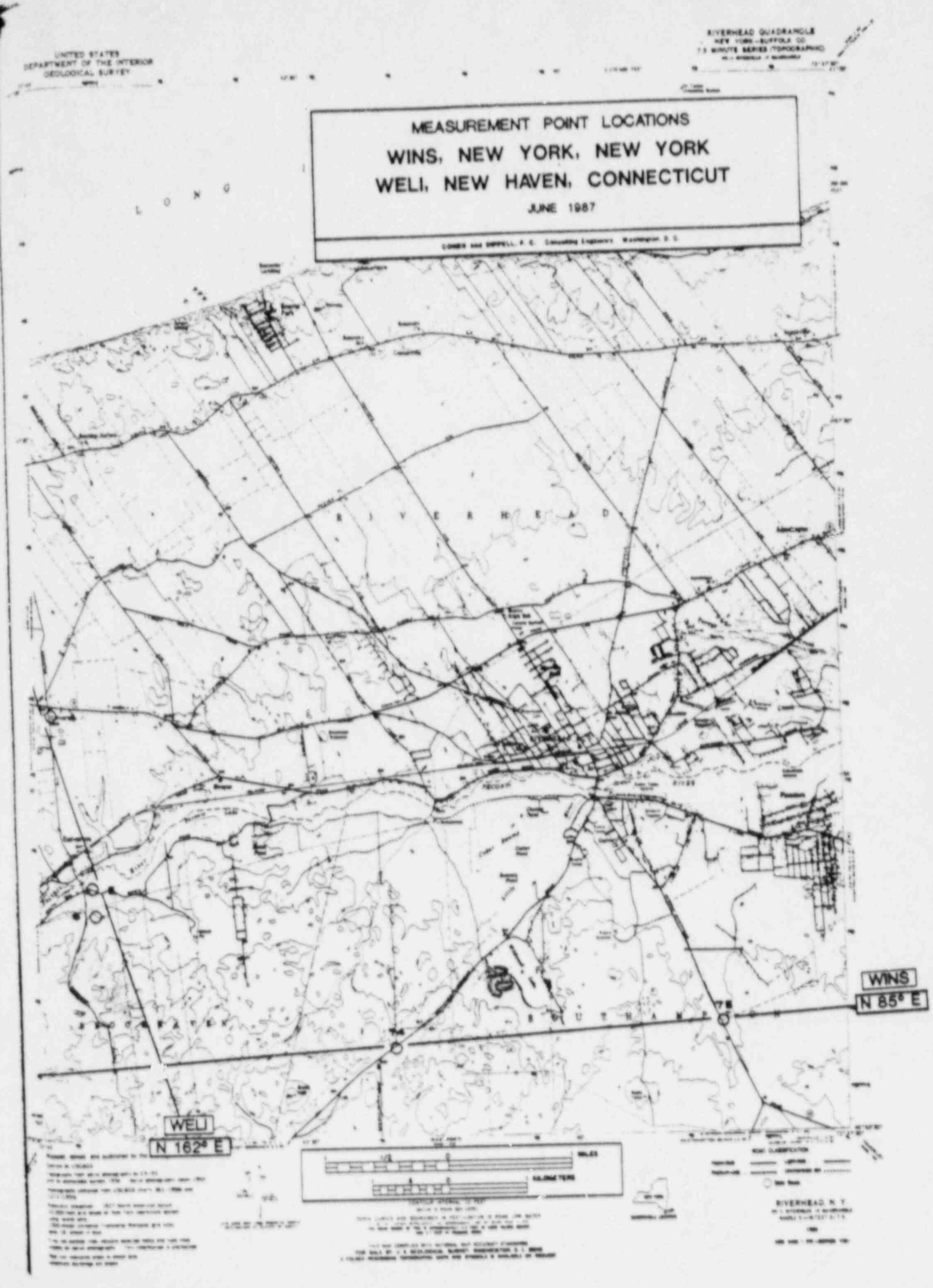

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
PATCHOGUE QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
WINS
N 85° E
WELI
N 187° E
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
PATCHOGUE, N. Y.

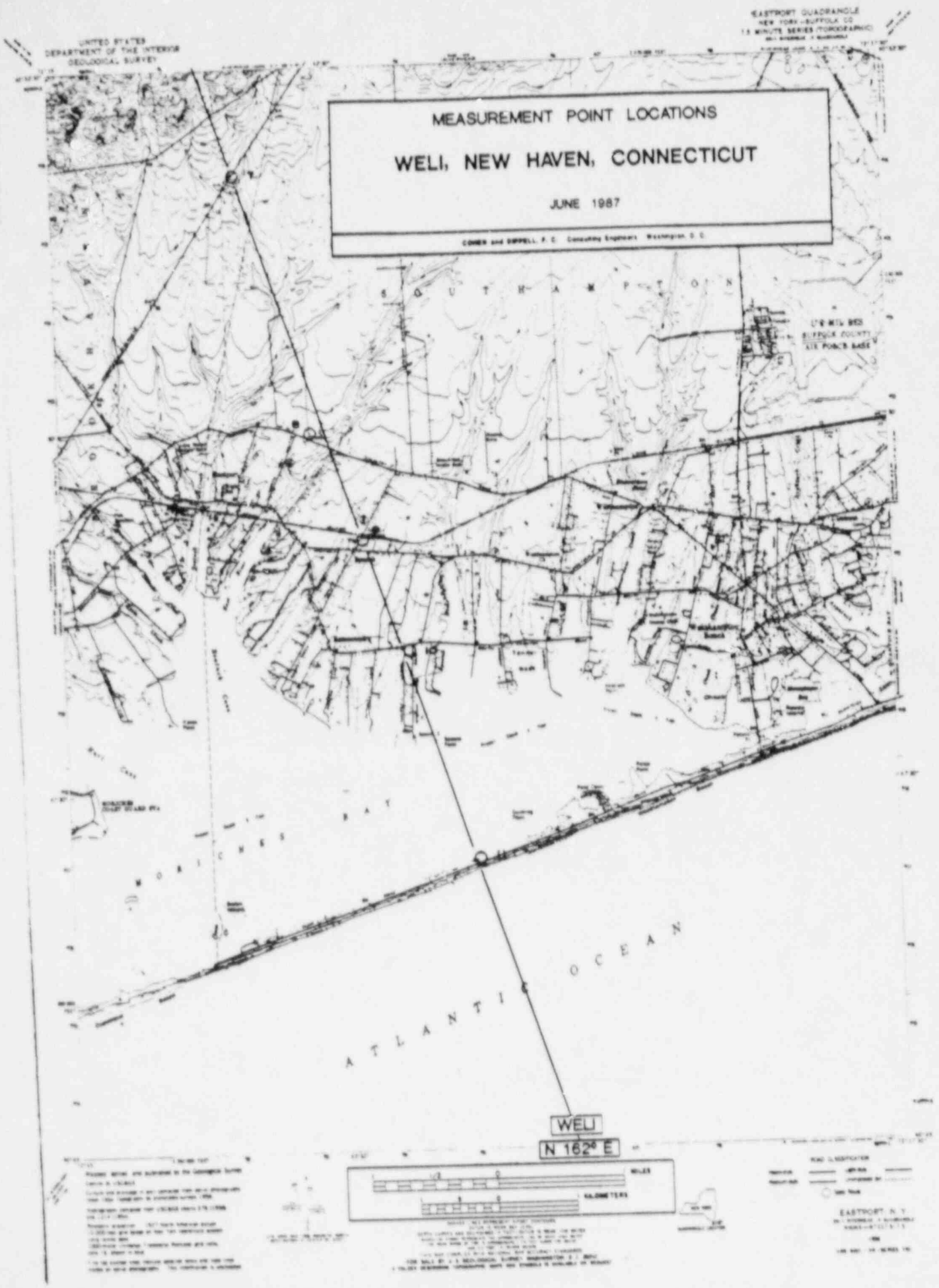

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BAYVILLE QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
MEASUREMENT POINT LOCATIONS
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
COMEN and SKIPPELL, P. C. Consulting Engineers Washington, D. C.
PATCHOGUE BAY
NICOLL BAY
GREAT SOUTH BAY
BROOKHAVEN
OCEAN
ATLANTIC
N 187° E
WELI
BAYVILLE, N. Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BELLPORT QUADRANGLE
NEW YORK - SUFFOLK CO.
WINS
N 85° E
B R O O K H A V E N
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
BELLPORT BAY
BELLPORT, N.Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
WELI
N 182° E
WINS
N 85° E
N 172.5° E
WELI


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MORICHES QUADRANGLE
NEW YORK - SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
MEASUREMENT POINT LOCATIONS
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
COMES and DIPPELL, P.C. Consulting Engineers Washington, D.C.
BROOKHAVEN
MORICHES
BAY
ATLANTIC
OCEAN
WELI
N 172.5° E
MILES
KILOMETERS
ROAD CLASSIFICATION
MORICHES, N.Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
RIVERHEAD QUADRANGLE
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
WINS
N 85° E
WELI
N 162° E
RIVERHEAD N.Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
EASTPORT QUADRANGLE
NEW YORK—SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
MEASUREMENT POINT LOCATIONS
WELI, NEW HAVEN, CONNECTICUT
JUNE 1987
COMEN and UMPELL, P.C. Consulting Engineers Washington, D.C.
SOUTHAMPTON
SUFFOLK COUNTY
AIR FORCE BASE
ATLANTIC OCEAN
WELI
N 162° E
EASTPORT, N.Y.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MATTITUCK QUADRANGLE
NEW YORK—SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
MEASUREMENT POINT LOCATIONS
WINS, NEW YORK, NEW YORK
JUNE 1987
WINS
N 85° E
MILES
KILOMETERS
MATTITUCK, N. Y.

ATTACHMENT F

ATTACHMENT F

ENGINEERING REPORT
RE COMPUTED SIGNAL CONTOURS FOR STATIONS WICC, WELI, WGLI, WRED, WLIM, WLNG AM AND FM, WPLR(FM) AND WRCN-FM
SEPTEMBER 1987

COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN AND DIPPELL, P. C.

ENGINEERING REPORT
RE COMPUTED SIGNAL CONTOURS FOR STATIONS WICC, WELI, WGLI, WRHD, WLIM, WLNG AM AND FM, WPLR(FM) AND WRCN-FM
SEPTEMBER 1987

COHEN AND DIPPELL, P. C.

City of Washington)
)ss
District of Columbia)

Ralph E. Dippell, Jr., being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and Vice President of Cohen and Dippell, P.C., Consulting Engineers, Radio - Television, with offices at 1015 15th Street, N.W., Suite 703, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

That the attached engineering report was prepared by him or under his supervision and direction and;

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts, he believes them to be true.

Ralph E. Dippell, Jr.
District of Columbia
Professional Engineer
Registration No. 1385

Subscribed and sworn to before me this 15th day of September, 1987.

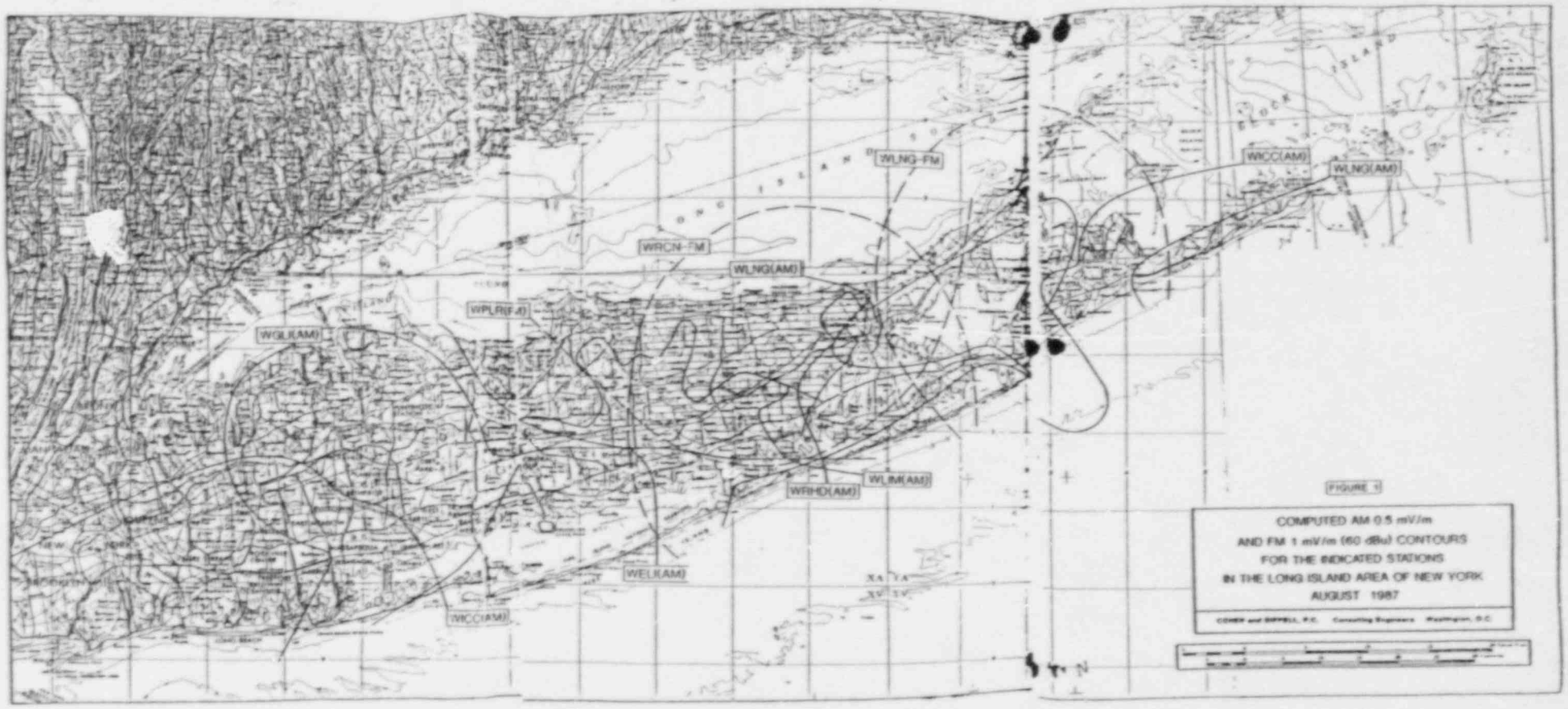
Notary Public
My Commission Expires
February 24, 1988

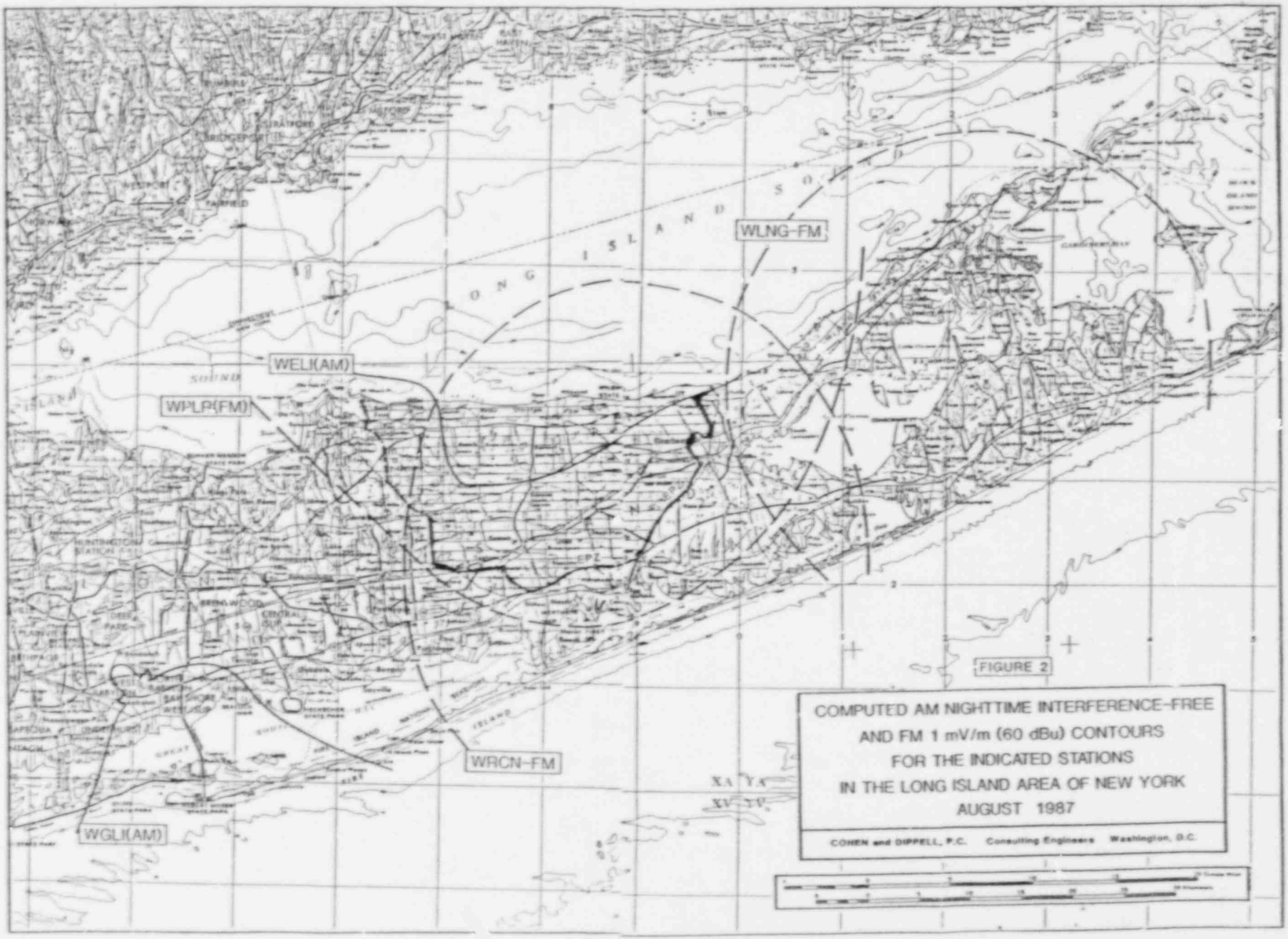
This engineering report has been prepared on behalf of Long Island Lighting Company (LILCO) and provides coverage maps showing computed signal contours in relation to the Emergency Planning Zone and Long Island, New York, for the following AM and FM stations.

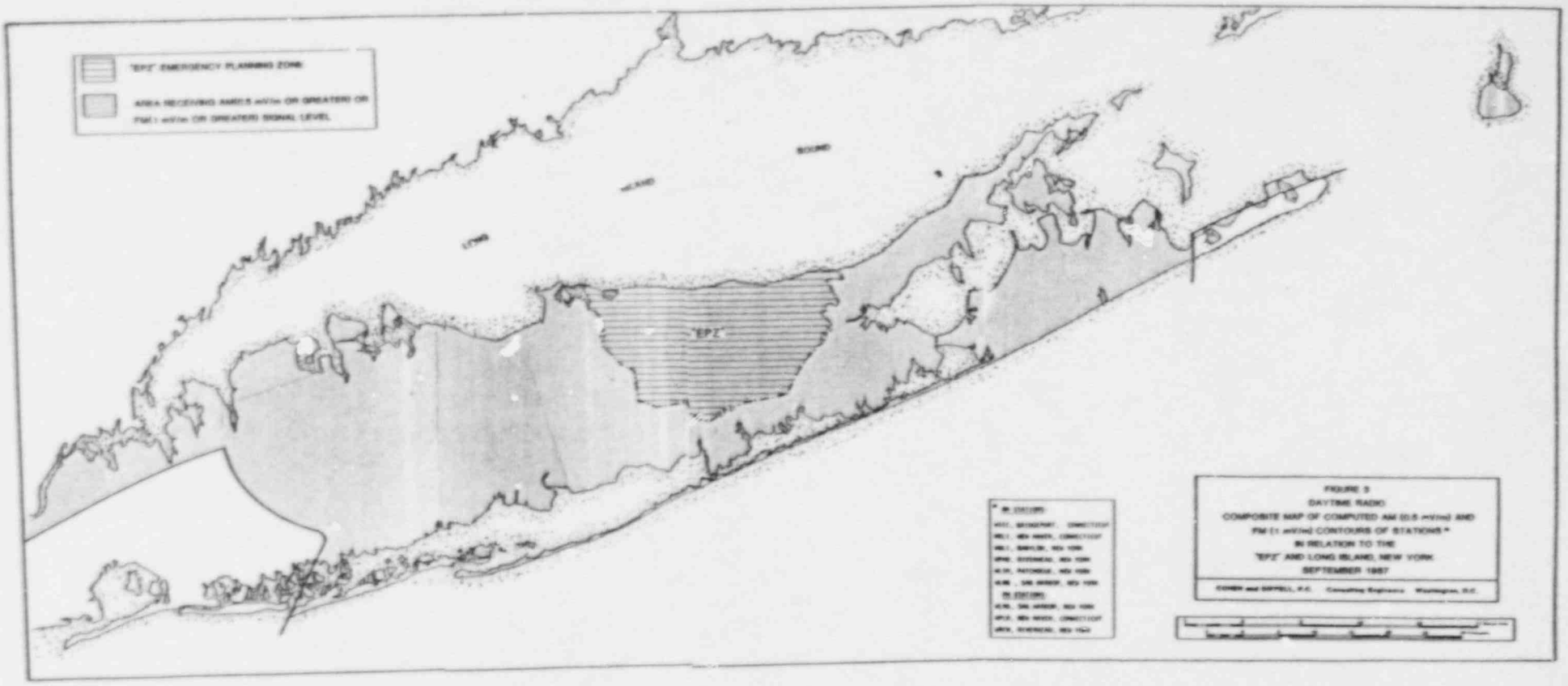
Call	City/State	Frequency	Power Night/Day	Mode of Operation
WICC(AM)	Bridgeport Connecticut	600 kHz	0.5/1 kW	DA-2
WELI(AM)	New Haven Connecticut	960 kHz	5 kW	DA-N
WGLI(AM)	Babylon New York	1290 kHz	1/5 kW	DA-2
WRHD(AM)	Riverhead New York	1570 kHz	1 kW	DA-D
WLIM(AM)	Patchogue New York	1580 kHz	10 kW	ND-D
WLNG(AM)	Sag Harbor New York	1600 kHz	0.5 kW	ND-D

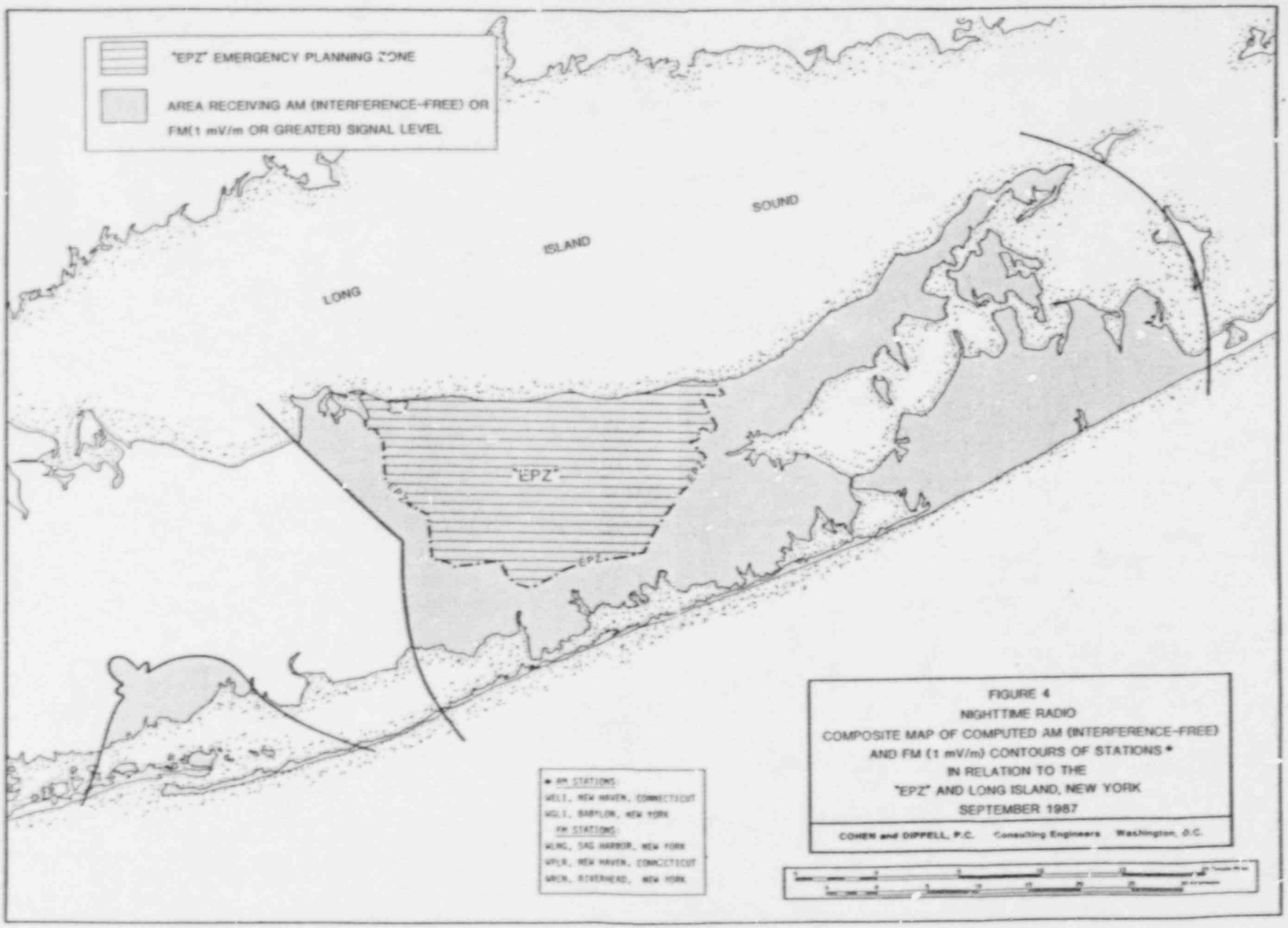
Call	City/State	Channel	Effective Radiated Power kW	Antenna Height Above Average Terrain meters
WLNG-FM	Sag Harbor New York	Channel 221A (92.1 mHz)	2.65	106
WPLR(FM)	New Haven Connecticut	Channel 256B (99.1 mHz)	14.0	290
WRCN-FM	Riverhead New York	Channel 280A (103.9 mHz)	1.5	142

The contours for these AM and FM stations in the Long Island area of New York have been taken from the FCC broadcast license file of each station with the exception of WPLR(FM). The 0.5 mV/m daytime and the nighttime interference-free contours are shown for AM stations and the computed 1 mV/m contour for FM stations. The 1 mV/m contour for WPLR(FM) in New Haven, Connecticut, is based on a field strength measurement survey conducted in May 1987. Field strength measurements on WPLR(FM) were conducted on three radial directions N 131°E, N 145°E, and N 160°E to determine the 1 mV/m contour. The measurements were conducted in accordance with Section 73.314 of the FCC Rules (Code of Federal Regulations 47). The measured data was plotted in dBu on graphs of field strength versus distance for each radial direction. A curve best fitting measurements was then drawn on the graph and used to determine the distance to the 1 mV/m contour.


WLNG-FM
WRCN-FM
WLNG(AM)
WPLR(FM)
WGLI(AM)
WFRD(AM)
WLIM(AM)
WELI(AM)
WCCI(AM)
WCC(AM)
WLNG(AM)
LONG ISLAND
BLOCK ISLAND
FIGURE 1
COMPUTED AM 0.5 mV/m
AND FM 1 mV/m (60 dBu) CONTOURS
FOR THE INDICATED STATIONS
IN THE LONG ISLAND AREA OF NEW YORK
AUGUST 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.


WLNG-FM
WELI(AM)
WPLR(FM)
WRCN-FM
WGLI(AM)
LONG ISLAND SOUND
FIGURE 2
COMPUTED AM NIGHTTIME INTERFERENCE-FREE
AND FM 1 mV/m (60 dBu) CONTOURS
FOR THE INDICATED STATIONS
IN THE LONG ISLAND AREA OF NEW YORK
AUGUST 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.


"EPZ" EMERGENCY PLANNING ZONE
AREA RECEIVING AM 0.5 mV/m OR GREATER OR
FM 1 mV/m OR GREATER SIGNAL LEVEL
"EPZ"
FIGURE 3
DAYTIME RADIO
COMPOSITE MAP OF COMPUTED AM 0.5 mV/m AND
FM 1 mV/m CONTOURS OF STATIONS *
IN RELATION TO THE
"EPZ" AND LONG ISLAND, NEW YORK
SEPTEMBER 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.


"EPZ" EMERGENCY PLANNING ZONE
AREA RECEIVING AM (INTERFERENCE-FREE) OR FM(1 mV/m OR GREATER) SIGNAL LEVEL
LONG
ISLAND
SOUND
"EPZ"
EPZ
* AM STATIONS
WELI, NEW HAVEN, CONNECTICUT
WGLI, BABYLON, NEW YORK
FM STATIONS
WLNG, SAG HARBOR, NEW YORK
WPLR, NEW HAVEN, CONNECTICUT
WRCN, RIVERHEAD, NEW YORK
FIGURE 4
NIGHTTIME RADIO
COMPOSITE MAP OF COMPUTED AM (INTERFERENCE-FREE)
AND FM (1 mV/m) CONTOURS OF STATIONS *
IN RELATION TO THE
"EPZ" AND LONG ISLAND, NEW YORK
SEPTEMBER 1987
COHEN and DIPPELL, P.C. Consulting Engineers Washington, D.C.

ATTACHMENT G

ATTACHMENT G

Report on a Poll of 600 Residents of the Shoreham EPZ

Methodology

A total of 600 randomly selected heads of households within the 10 mile EPZ around Shoreham were interviewed by telephone between September 30, 1987 and October 4, 1987.

The sample was selected on an every nth basis from lists of all residents with home telephone numbers living within the EPZ.

Interviewing was conducted by Mktg., Inc., a nationally recognized survey research interviewing firm with headquarters in East Islip, New York.

Responses were key-punched, 100% verified, and tabulated by CRC Information Systems, Inc. of New York, New York. A copy of the computer tabulations is enclosed.

The margin of error (at the 95% confidence level) for the responses is about $\pm$ 2½%.

Highlights

98% of those interviewed have at least one radio in their home at the present time. There is a mean of 3.30 radios per household.

97% of all respondents (99% of those with radios) have at least one AM/FM or FM only radio.

75% of those interviewed have an AM/FM or FM only radio that can be operated by battery.

92% of all households have at least one automobile equipped with an AM/FM or FM only radio.

17% of those interviewed are planning to buy an AM/FM or FM only radio within the next six months.

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE	TABLE TITLE	FILTER:
1	Q.1 HOW MANY RADIOS DO YOU AND YOUR FAMILY HAVE IN YOUR HOME, OR DON'T YOU HAVE ANY RADIOS AT THE PRESENT TIME?	
2	Q.1 FROM WHAT YOU REMEMBER, HOW MANY OF THESE RADIOS ARE BOTH AM AND FM?	
3	Q.1 HOW MANY OF THESE RADIOS CAN BE OPERATED BY BATTERY?	
4	Q.1 HOW MANY OF THESE RADIOS ARE JUST AM?	
5	Q.1 AND HOW MANY OF THESE CAN BE OPERATED BY BATTERY?	
6	Q.1 AND HOW MANY OF YOUR RADIOS ARE JUST FM?	
7	Q.1 AND HOW MANY OF THESE CAN BE OPERATED BY BATTERY?	
8	Q.1 TOTAL INCIDENCE OF OWNING AN FM RADIO	
9	Q.2 DO YOU AND YOUR FAMILY OWN ANY AUTOMOBILES?	
10	Q.2 HOW MANY OF THESE HAVE CAR RADIOS?	
11	Q.2 HOW MANY OF THESE CAR RADIOS ARE BOTH AM AND FM?	
12	Q.2 AND HOW MANY ARE JUST FM?	
13	Q.3 DO YOU THINK YOU OR YOUR FAMILY WILL BE BUYING EITHER AN AM/FM OR AN FM ONLY RADIO DURING THE NEXT SIX MONTHS OR SO?	
14	Q.3 DO YOU THINK YOU OR YOUR FAMILY WILL BE BUYING EITHER AN AM/FM OR AN FM ONLY RADIO DURING THE NEXT SIX MONTHS OR SO?	DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

CAMPAIGN RESEARCH, INC. E/Z RADIO STUDY TABLE 1

Q.1 HOW MANY RADIOS DO YOU AND YOUR FAMILY HAVE IN YOUR HOME, OR DON'T YOU HAVE ANY RADIOS AT THE PRESENT TIME?

	TOTAL
TOTAL RESPONDENTS	600
NONE	13 2.
1	89 15.
2	135 23.
3	135 23.
4	94 16.
5	58 10.
6	36 6.
7	15 3.
8	8 1.
9	2 *
10	11 2.
11	1 *
12	2 *
DON'T KNOW	1 *

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 1/2

Q.1 HOW MANY RADIOS DO YOU AND YOUR FAMILY HAVE IN YOUR HOME, OR DON'T YOU HAVE ANY RADIOS AT THE PRESENT TIME?

	TOTAL
TOTAL RESPONDENTS	600
MEAN	3.30
STD. DEV.	2.04
STD. ERR.	.083

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 2

Q.1 FROM WHAT YOU REMEMBER, HOW MANY OF THESE RADIOS ARE BOTH AM AND FM?

	TOTAL
TOTAL RESPONDENTS	600
NONE	3 1.
1	88 15.
2	133 22.
3	138 23.
4	93 16.
5	53 9.
6	36 6.
7	13 2.
8	6 1.
9	4 1.
10	10 2.
11	0 -
12	2 *
DON'T KNOW	4 1.
NOT ELIGIBLE	13 2.

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 2/2

Q.1 FROM WHAT YOU REMEMBER, HOW MANY OF THESE RADIOS ARE BOTH AM AND FM?

	TOTAL
TOTAL RESPONDENTS	600
MEAN	3.24
STD. DEV.	2.02
STD. ERR.	.082

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 3

Q.1 HOW MANY OF THESE RADIOS CAN BE OPERATED BY BATTERY?

	TOTAL
TOTAL RESPONDENTS	600
NONE	123 21.
1	190 32.
2	143 24.
3	66 11.
4	27 5.
5	13 2.
6	7 1.
7	1 *
8	2 *
9	3 1.
10	1 *
11	0 -
12	0 -
DON'T KNOW	8 1.
NOT ELIGIBLE	16 3.

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 3/2

Q.1 HOW MANY OF THESE RADIOS CAN BE OPERATED BY BATTERY?

	TOTAL
TOTAL RESPONDENTS	600
MEAN	1.58
STD. DEV.	1.52
STD. ERR.	.062

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 4

Q.1 HOW MANY OF THESE RADIOS ARE JUST AM?

	TOTAL
TOTAL RESPONDENTS	600
NONE	565 94.
1	13 2.
2	4 1.
3	1 *
4	0 -
5	1 *
6	0 -
7	0 -
8	0 -
9	0 -
10	0 -
11	0 -
12	0 -
DON'T KNOW	3 1.
NOT ELIGIBLE	13 2.

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 4/2

Q.1 HOW MANY OF THESE RADIOS ARE JUST AM?

	TOTAL
TOTAL RESPONDENTS	600
MEAN	.05
STD. DEV.	.32
STD. ERR.	.013

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 5

Q.1 AND HOW MANY OF THESE CAN BE OPERATED BY BATTERY?

	TOTAL
TOTAL RESPONDENTS	600
NONE	10 2.
1	6 1.
2	3 1.
3	0 -
4	0 -
5	0 -
6	0 -
7	0 -
8	0 -
9	0 -
10	0 -
11	0 -
12	0 -
DON'T KNOW	3 1.
NOT ELIGIBLE	578 96.

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 5/2

Q.1 AND HOW MANY OF THESE CAN BE OPERATED BY BATTERY?

	TOTAL
TOTAL RESPONDENTS	600
MEAN	.02
STD. DEV.	.17
STD. ERR.	.007

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 6

Q.1 AND HOW MANY OF YOUR RADIOS ARE JUST FM?

	TOTAL
TOTAL RESPONDENTS	600
NONE	578 96.
1	4 1.
2	1 *
3	0 -
4	0 -
5	0 -
6	0 -
7	0 -
8	0 -
9	0 -
10	0 -
11	0 -
12	0 -
DON'T KNOW	4 1.
NOT ELIGIBLE	13 2.

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 6/2

Q.1 AND HOW MANY OF YOUR RADIOS ARE JUST FM?

	TOTAL
TOTAL RESPONDENTS	600
MEAN	.01
STD. DEV.	.12
STD. ERR.	.005

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 7

Q.1 AND HOW MANY OF THESE CAN BE OPERATED BY BATTERY?

	TOTAL
TOTAL RESPONDENTS	600
NONE	3 1.
1	1 *
NO ANSWER	5 1.
NOT ELIGIBLE	591 99.
MEAN	*
STD. DEV.	.04
STD. ERR.	.002

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 8

Q.1 TOTAL INCIDENCE OF OWNING AM FM RADIO

	TOTAL
TOTAL RESPONDENTS	600
RADIO IS AM/FM OR FM-ONLY (NET)	581 97.
AM/FM	580 97.
FM-ONLY	5 1.
NUMBER OF AM/FM OR FM-ONLY RADIOS	
1	89 15.
2	133 23.
3	137 24.
4	93 16.
5	54 9.
6	40 7.
7	13 2.
8	6 1.
9	3 1.
10	11 2.
11	0 -
12	2 *

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 8/2

8.1 TOTAL INCIDENCE OF OWNING AN FM RADIO

	TOTAL
TOTAL RESPONDENTS	600
MEAN	3.25
STD. DEV.	2.03
STD. ERR.	.083

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 9

Q.2 DO YOU AND YOUR FAMILY OWN ANY AUTOMOBILES?

	TOTAL
TOTAL RESPONDENTS	600
YES, OWN AUTOMOBILES	567 95.
NO	32 5.
NO ANSWER	1 *

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 10

Q.2 HOW MANY OF THESE HAVE CAR RADIOS?

	TOTAL
TOTAL RESPONDENTS	600
NONE	13 2.
1	155 26.
2	276 46.
3	83 14.
4	33 6.
OTHER	6 1.
DON'T KNOW	1 *
NOT ELIGIBLE	33 6.
MEAN	1.81
STD. DEV.	.97
STD. ERR.	.040

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY TABLE 11

Q.2 HOW MANY OF THESE CAR RADIOS ARE BOTH AM AND FM?

	TOTAL
TOTAL RESPONDENTS	600
NONE	20 3.
1	170 28.
2	251 42.
3	75 13.
4	28 5.
OTHER	3 1.
DON'T KNOW	7 1.
NOT ELIGIBLE	46 8.
MEAN	1.68
STD. DEV.	1.00
STD. ERR.	.041

Q.2 AND HOW MANY ARE JUST FM?

	TOTAL
TOTAL RESPONDENTS	600
NONE	475 79.
1	62 10.
2	8 1.
3	0 -
4	0 -
OTHER	1 *
DON'T KNOW	8 1.
NOT ELIGIBLE	46 8.
MEAN	.13
STD. DEV.	.37
STD. ERR.	.015

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 13

Q.3 DO YOU THINK YOU OR YOUR FAMILY WILL BE BUYING EITHER AN AM/FM OR AN FM ONLY RADIO DURING THE NEXT SIX MONTHS OR SO?

	TOTAL
TOTAL RESPONDENTS	600
YES, WILL BUY AN AM/FM RADIO OR FM ONLY RADIO IN NEXT 6 MONTHS	104 17.
NO	440 73.
DON'T KNOW	56 9.

Q.3 DO YOU THINK YOU OR YOUR FAMILY WILL BE BUYING EITHER AN AM/FM OR AN FM ONLY RADIO DURING THE NEXT SIX MONTHS OR SO?

FILTER: DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

	TOTAL
TOTAL RESPONDENTS	19
YES, WILL BUY AN AM/FM RADIO OR FM ONLY RADIO IN NEXT 6 MONTHS	0 -
NO	19 100.
DON'T KNOW	0 -

ATTACHMENT H

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE	TABLE TITLE	FILTER:
1	Q.2 DO YOU AND YOUR FAMILY OWN ANY AUTOMOBILES?	DO NOT HAVE AND AM/FM OR FM-ONLY RADIO
2	Q.2 HOW MANY OF THESE HAVE CAR RADIOS?	DO NOT HAVE AND AM/FM OR FM-ONLY RADIO
3	Q.2 HOW MANY OF THESE CAR RADIOS ARE BOTH AM AND FM?	DO NOT HAVE AND AM/FM OR FM-ONLY RADIO
4	Q.2 AND HOW MANY ARE JUST FM?	DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

ATTACHMENT H

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

Q.2 DO YOU ANC YOUR FAMILY OWN ANY AUTOMOBILES?

FILTER: DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

	TOTAL
TOTAL RESPONDENTS	19
YES, OWN AUTOMOBILES	14 74.
NO	5 26.
NO ANSWER	0 -

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

TABLE 2

Q.2 HOW MANY OF THESE HAVE CAR RADIOS?

FILTER: DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

	TOTAL
TOTAL RESPONDENTS	19
NONE	2 11.
1	7 37.
2	3 16.
3	1 5.
4	1 5.
OTHER	0 -
DON'T KNOW	0 -
NOT ELIGIBLE	5 26.
MEAN	1.05
STD. DEV.	1.13
STD. ERR.	.259

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

Q.2 HOW MANY OF THESE CAR RADIOS ARE BOTH AM AND FM?

FILTER: DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

	TOTAL
TOTAL RESPONDENTS	19
NONE	0 -
1	7 37.
2	2 11.
3	1 5.
4	1 5.
OTHER	0 -
DON'T KNOW	1 5
NOT ELIGIBLE	7 37.
MEAN	.95
STD. DEV.	1.13
STD. ERR.	.259

CAMPAIGN RESEARCH, INC. EPZ RADIO STUDY

Q.2 AND HOW MANY ARE JUST FM?

FILTER: DO NOT HAVE AND AM/FM OR FM-ONLY RADIO

	TOTAL
TOTAL RESPONDENTS	19
NONE	11 58.
1	0 -
2	0 -
3	0 -
4	0 -
OTHER	0 -
DON'T KNOW	1 5.
NOT ELIGIBLE	7 37.
MEAN	.00
STD. DEV.	.00
STD. ERR.	.000

LILCO, April 13, 1988

CERTIFICATE OF SERVICE

In the Matter of
LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station, Unit 1)
Docket No. 50-322-OL-3

I hereby certify that copies of **TESTIMONY OF DOUGLAS CROCKER, RALPH E. DIPPELL, AND WILLIAM G. JOHNSON ON THE REMANDED ISSUE OF THE COVERAGE OF LILCO's EMERGENCY BROADCAST SYSTEM** were served this date upon the following by Federal Express as indicated by one asterisk, or by first-class mail, postage prepaid.

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Silver Spring, Maryland 20901

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Bethesda, MD 20814

Secretary of the Commission
Attention Docketing and Service Section
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Atomic Safety and Licensing Appeal Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Adjudicatory File
Atomic Safety and Licensing Board Panel Docket
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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DATED: April 13, 1988