

TESTIMONY OF ROBERT B. MINOGUE
TO THE
SUBCOMMITTEE ON ENERGY, NUCLEAR PROLIFERATION,
AND FEDERAL SERVICES
OF THE
SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS
May 8, 1979

My name is Robert Minogue. I am the Director of the Nuclear Regulatory Commission's Office of Standards Development. Among the functions of this office is the responsibility for developing radiation protection standards for the activities regulated by the NRC. I am also the Commission's representative on the Interagency Task Force on Ionizing Radiation chaired by Mr. Peter Libassi, General Counsel of the Department of Health, Education and Welfare. NRC staff members participated extensively in the activities of each of the sub-groups of the Task Force. We believe that the seven draft reports issued for public comment provide a thorough and comprehensive examination of the principal issues concerned with Federal activities in the area of ionizing radiation.

Today I would like to describe the responsibilities of the Nuclear Regulatory Commission for setting radiation protection standards and discuss possible mechanisms for improving the coordination of Federal radiation protection activities. The Nuclear Regulatory Commission has a legislative mandate to protect public health and safety for activities that involve the production, use, or disposal

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of source materials ^{1/}, special nuclear materials ^{2/}, or byproduct materials ^{3/}. This mandate arises from the authorities of the Atomic Energy Act of 1954, as amended ^{4/}, and the Energy Reorganization Act of 1974, as amended ^{5/}. The Energy Reorganization Act transferred these authorities to the Nuclear Regulatory Commission and abolished the former Atomic Energy Commission (AEC). The Atomic Energy Act authorizes the Commission to establish such standards and instructions to govern the possession and use of these materials as the Commission deems necessary or desirable to protect health ^{6/}.

The Energy Reorganization Act also provided NRC with authority for conducting confirmatory research activities necessary to support its regulatory functions. The Interagency Task Force on Ionizing Radiation specifically recognized the importance of meeting the information needs of regulatory agencies in planning a comprehensive program of radiation research. In addition to having these fundamental research needs addressed, the NRC also needs to retain its own capability for performing confirmatory research and technical support activities to address

^{1/} Source materials are natural uranium and thorium ores and their concentrates

^{2/} Special nuclear materials include uranium enriched in uranium-235, uranium-233, and plutonium

^{3/} Byproduct materials include radioactive materials which are produced in conjunction with the use of special nuclear materials or which result from the production of source materials

^{4/} The Atomic Energy Act of 1954, as amended, P.L. 83-703 (68 Stat. 260 032 919 et seq.) 42 U.S.C. 2011 et seq.

^{5/} The Energy Reorganization Act of 1974, P.L. 93-438 (88 Stat. 1233 et seq.) 42 U.S.C. 5801 et seq.

^{6/} Chapter 14, Section 161, paragraph b. of the Atomic Energy Act of 1954, as amended

specific regulatory information needs.

AEC's standard-setting authorities were modified by Reorganization Plan No. 3 of 1970^{7/} which transferred the authority for setting generally applicable environmental radiation standards from the former Atomic Energy Commission to the Environmental Protection Agency (EPA). In addition to establishing and enforcing its own standards, the NRC retains the responsibility for enforcing, for activities it regulates, the generally applicable environmental standards established by EPA.

The radiation standards* established by the Nuclear Regulatory Commission and its predecessor, the AEC, control both occupational radiation exposure and exposure of members of the public from licensed operations. These standards follow the Federal radiation guidance prepared by the former Federal Radiation Council and the Environmental Protection Agency.

Within the context of existing Federal radiation guidance, NRC has the responsibility of eliminating unnecessary radiation exposures and ensuring that every effort is made to keep radiation exposures within the Federal Radiation Protection Guides, and as far below these guides as is practicable. The NRC regulations, regulatory guides for licensees on acceptable methods of complying with these regulations, and regulatory actions such as licensing and inspection and enforcement have embodied NRC's philosophy of keeping radiation exposures "as low as is reasonably achievable" (ALARA) which is consistent with this Federal guidance.

^{7/} Reorganization Plan No. 3 of 1970, Section 2 (6).

* These standards are contained in our regulations in Part 20 of Title 10 of the Code of Federal Regulations.

The NRC's authorities for setting radiation protection standards are intensive rather than extensive. By this I mean that they apply to a limited range of radiation-producing activities. The NRC's standard-setting authorities apply to commercial nuclear energy and most of the nuclear fuel cycle and to peaceful applications of source, byproduct, and special nuclear materials. These activities comprise only a small portion of the total number of sources of ionizing radiation and contribute only a small fraction, less than 10 percent^{8/}, of the estimated total radiation exposure received by the U.S. population. However, many of the activities that NRC regulates have the potential for causing larger significant individual and population radiation doses.

The number of sources of ionizing radiation is a principal factor to consider in improving the coordination of Federal radiation research and radiation protection activities. Two of the principal sources of radiation exposure are naturally-occurring radioactive material and cosmic radiation. These natural radiation sources comprise the major single contribution to radiation exposure of the U.S. population. They not only irradiate the entire U.S. population but also may result in significant increases in radiation exposure to certain segments

^{8/} U.S. Environmental Protection Agency, Radiological Quality of the Environment in the United States, 1977 U.S. Environmental Protection Agency Report EPA 520/1-77-009 (September, 1977) Chapter 1. supplemented by NRC data. Natural background radiation accounts for approximately one-half of the total radiation dose and medical and dental radiology for 36 percent, together totaling approximately 85% of the total dose. Technologically enhanced natural radioactivity (phosphate mining, etc.) contributes over 7%. NRC licensed activities contribute about 8.5% of the total U.S. population dose and radio-pharmaceutical use accounts for about 97% of this contribution. Nuclear power, its fuel cycle, and occupational exposures together contribute less than 0.3% of the total radiation dose received by the U.S. population.

of the population such as people living at high altitudes, aircraft crews, and members of the general population residing in brick and stone buildings or workers engaged in underground mining or phosphate production activities. In addition to enhancing exposure to natural radiation, man has also created numerous sources of ionizing radiation. These sources range from electronic products such as X-ray machines, television receivers, and particle accelerators to radioactive materials produced in nuclear reactors and radioactive fallout from atmospheric nuclear tests. Radiation is widely used in the practice of medicine. This diversity of radiation sources exceeds the scope of authority of any single Federal agency.

As recognized by the Committee's Study on Federal Regulation^{9/}, there are many Federal agencies that have responsibility for radiation protection activities. The number of agencies with such responsibilities is, in part, a consequence of the diversity and pervasiveness of the sources of ionizing radiation. Reorganizations and new environmental and health protection legislation enacted since the late 1960's have also resulted in proliferation of radiation protection responsibilities. In a few cases, this has created areas of overlapping agency authorities resulting in some duplication of efforts, in gaps in and non-uniform protection of the public, and in the ineffective allocation of resources. To the extent permitted by the diversity of radiation sources and agency mandates, some consolidation, better coordination, and a clearer delineation of the responsibilities of various Federal agencies would lead toward more uniform and effective protection for all segments

^{9/} Committee on Governmental Affairs, United States Senate, Study on Federal Regulation, Vol. 5, Section E., Senate Document No. 95-91 (December 1977) pp. 326-339.

of the population.

Radiation protection responsibilities reside in a number of Federal agencies for a variety of reasons. Often radiation is a small component of a larger public health or safety issue for which the agency is responsible, e.g. transportation, safety and efficacy of drugs, or environmental pollution. Radiation protection must be achieved in a way that does not compromise other aspects of public health and safety. Therefore, we do not believe it is feasible to combine into a single agency all responsibility for radiation protection. This would preclude examining some public health and safety issues as a whole. However, we believe improvements can be made in radiation protection by better coordination among agencies.

I do not plan to devote much time to exploring the various options for achieving improved coordination of Federal radiation protection activities. These options have been explored in detail in the Committee's Study on Federal Regulation^{9/}, in the public responses to the Committee's request for public input on the study^{10/}, and in the draft report of the Interagency Task Force on Ionizing Radiation dealing with Institutional Arrangements^{11/}. Rather than summarizing and repeating the material in these reports, I would like to focus my remarks upon one alternative in particular, that of reconstituting a body similar in organization and function to the former Federal Radiation Council (FRC).

^{10/} Committee on Governmental Affairs, United States Senate, Federal Regulation of Radiation Health and Safety: Organizational Problems and Possible Remedies, Committee Print (August 1978)

^{11/} Draft Report of the Interagency Task Force on Ionizing Radiation on Institutional Arrangements (April 17, 1979)

The Federal Radiation Council (FRC) provided a mechanism which enabled the President to issue radiation protection guidance to Federal agencies. This guidance, which reflected the best scientific knowledge as well as national policy considerations, provided a common basis for Federal agencies to develop radiation protection standards.

The FRC also provided a forum for Federal agencies to coordinate their radiation protection activities, assess problems, and establish priorities. It served as a mechanism for consultation among standard-setters, the agencies with responsibility for implementing these standards, and radiation user agencies. These exchanges helped ensure that the basic standards would be practical to implement and enforce. Consultation and coordination among agencies has not been effective since the demise of the FRC as was noted in the Committee's report^{10/}. Another factor supporting re-creation of the FRC is that until recently, the Environmental Protection Agency has not been active in implementing its FRC role.

Although radiation protection issues may be too broad for a single agency to cope with adequately^{10/}, a reconstituted FRC could serve to coordinate and integrate radiation protection activities. For example, it could provide a forum for inter-agency assessment of how to apply in Federal activities the information in the recently issued National Academy of Sciences report, "The Effects on Populations of Exposure to Low Levels of Ionizing Radiations", with its dissenting minority view. In addition, a reconstituted FRC has administrative advantages in that it would have only a small central staff and would not create an additional large and expensive bureaucratic structure. By relying upon the collective expertise available from participating agencies, such

an organization could augment the limits of expertise and breadth available in a single agency.

The organization and operating procedures of the former FRC would need some modifications in order to be fully effective in today's society. The original FRC had limited functions: to advise the President on radiation matters, to recommend proposed Federal guidance to the President, and to coordinate Federal-State interactions on radiation matters^{12/13/}. The FRC did not have authority for any general oversight of agency's implementation of Federal guidance, an effective mechanism for resolving interagency disputes, or mechanisms for ensuring adequate public participation in its deliberations.

Although the FRC guidance, once it was approved and issued by the President, was generally accepted by Federal agencies and reflected in their regulations and activities, the FRC did not have authority^{14/} to compel adoption of the guidance or to ensure adequate implementation by all agencies. The authority for ensuring adequate implementation resulted primarily from the fact that the membership of the FRC consisted of agency heads and Cabinet secretaries who had authority for ensuring adoption of the guidance within their own agencies or departments. I believe that some limited role for overseeing the implementation and enforcement of Federal guidance should be added to the

^{12/} Executive Order 10831, Establishing the Federal Radiation Council (1959)

^{13/} Section 274h. of the Atomic Energy Act of 1954 as amended, which was enacted in Public Law 86-373 (1959).

^{14/} Testimony of Elmer B. Staats, Deputy Director of the Bureau of the Budget, in Radiation Protection Criteria and Standards: Their Bases and Uses, Hearings before the Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, Congress of the United States, Eight-sixth Congress (1960) pp. 98-105.

existing FRC authorities and that this would strengthen the role of a reconstituted FRC.

A reconstituted Federal Radiation Council should have mechanisms for resolving differences and concerns raised by affected agencies. The Council should permit the views of all agencies to be aired without requiring unanimity on decisions so that one or a few agencies could not create an impasse or block Council actions. One way of achieving this goal would be to provide for a majority vote in decision-making together with an opportunity for dissenting agencies to make their views known to the President, but with a clear mandate in the charter of the the Council to move expeditiously even when unanimity is lacking.

The Chairmanship of a reconstituted FRC could be either assigned permanently, rotated among the members, or be an individual designated by the President. If an agency is to serve as permanent chair, I believe that the agency in this role should be a regulatory agency or health research agency, ideally one involved with a broad range of public health concerns, rather than a user agency.

The old Federal Radiation Council operated in a different era than the present "government in the sunshine" climate. There were few, if any, provisions for keeping the public, industry, State agencies, or other interested parties aware of the issues under consideration, progress being made, or the basis for decision-making. A primary modification to the operating procedures of the former FRC would be to ensure that there are mechanisms for providing public input into the deliberations not only in the formulation of proposed Federal guidance before it is

submitted to the President, but also in determining priorities for Council action. Procedures should be instituted that would not only provide to the public information on the basis for decision-making but also include provisions for obtaining comments or input from the public, the States, radiation workers and labor unions, industry, and other interested parties prior to the issuance of guidance or other major actions taken by the Council.

In summation, I believe that there is considerable merit in re-creating an interagency coordinating Council, similar to the former Federal Radiation Council, but with expanded functions and better defined procedures for addressing agency concerns and providing for increased public participation. Such a Council could provide means for improved coordination of the acquisition, analysis, and dissemination of data on radiation doses, environmental radioactivity levels, and the potential health consequences of low-level radiation exposure. In addition, the Council could provide a more centralized focus for information exchange with national and international scientific organizations. Such a central focus would simplify Congressional and public oversight of Federal radiation protection activities. I would also hope that such an organization would lead to the accelerated development of Federal radiation guidelines, in increased public confidence in Federal radiation protection activities, in more efficient and more effective use of agency resources, and in more uniform and more comprehensive protection of public health and the environment from the hazards of radiation.

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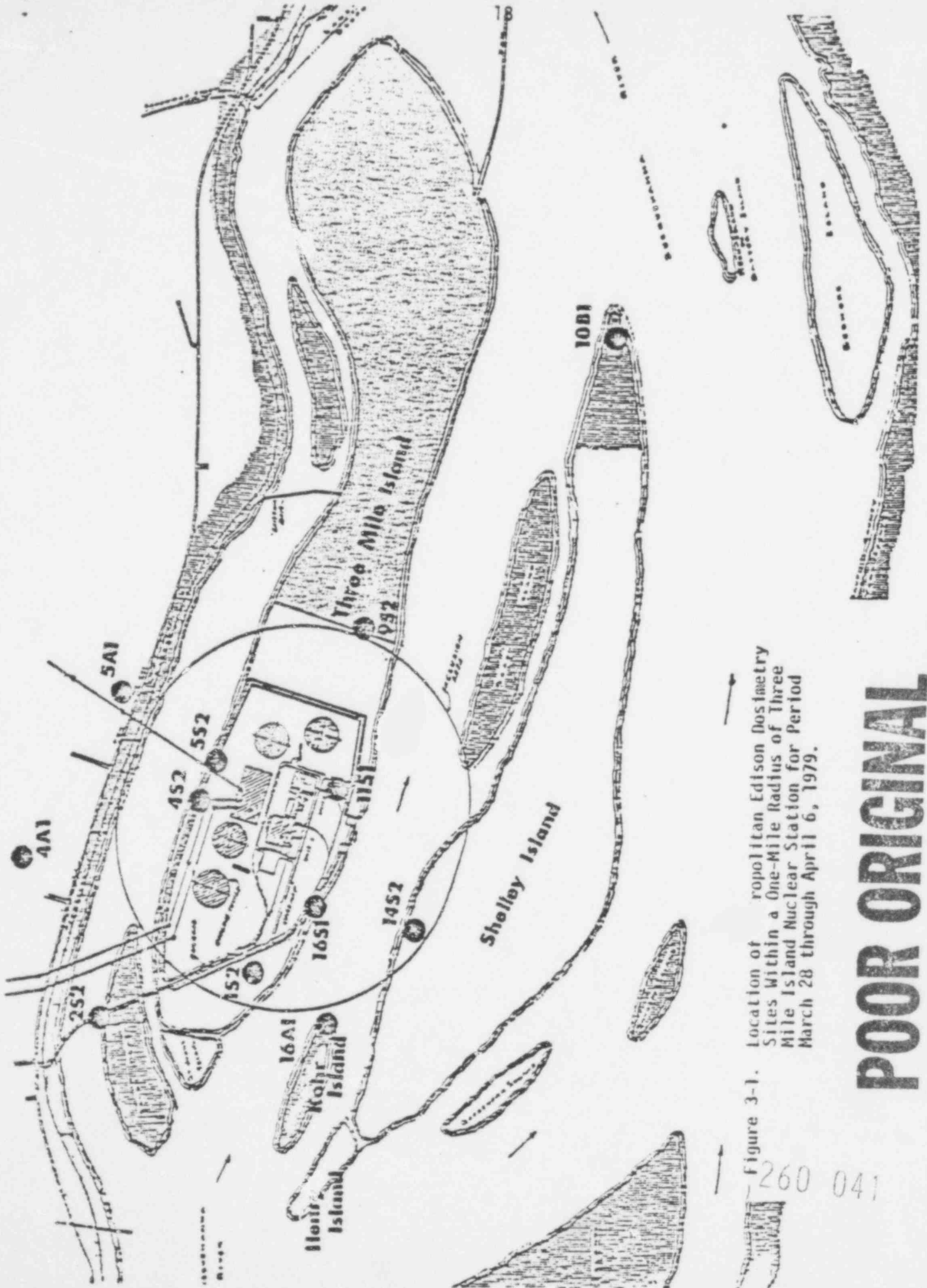


Figure 3-1. Location of Metropolitan Edison Dosimetry Sites Within a One-Mile Radius of Three Mile Island Nuclear Station for Period March 28 through April 6, 1979.

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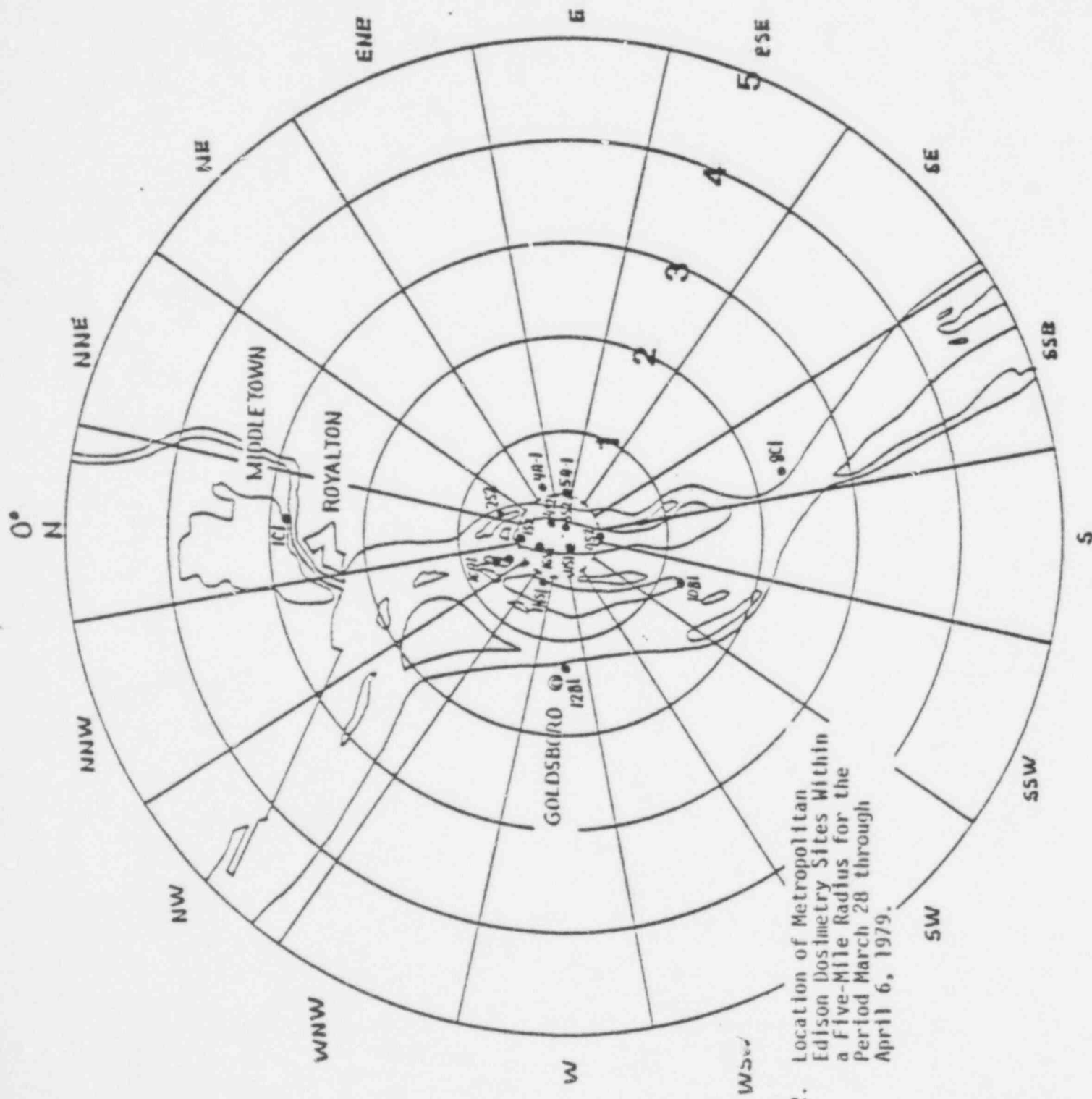
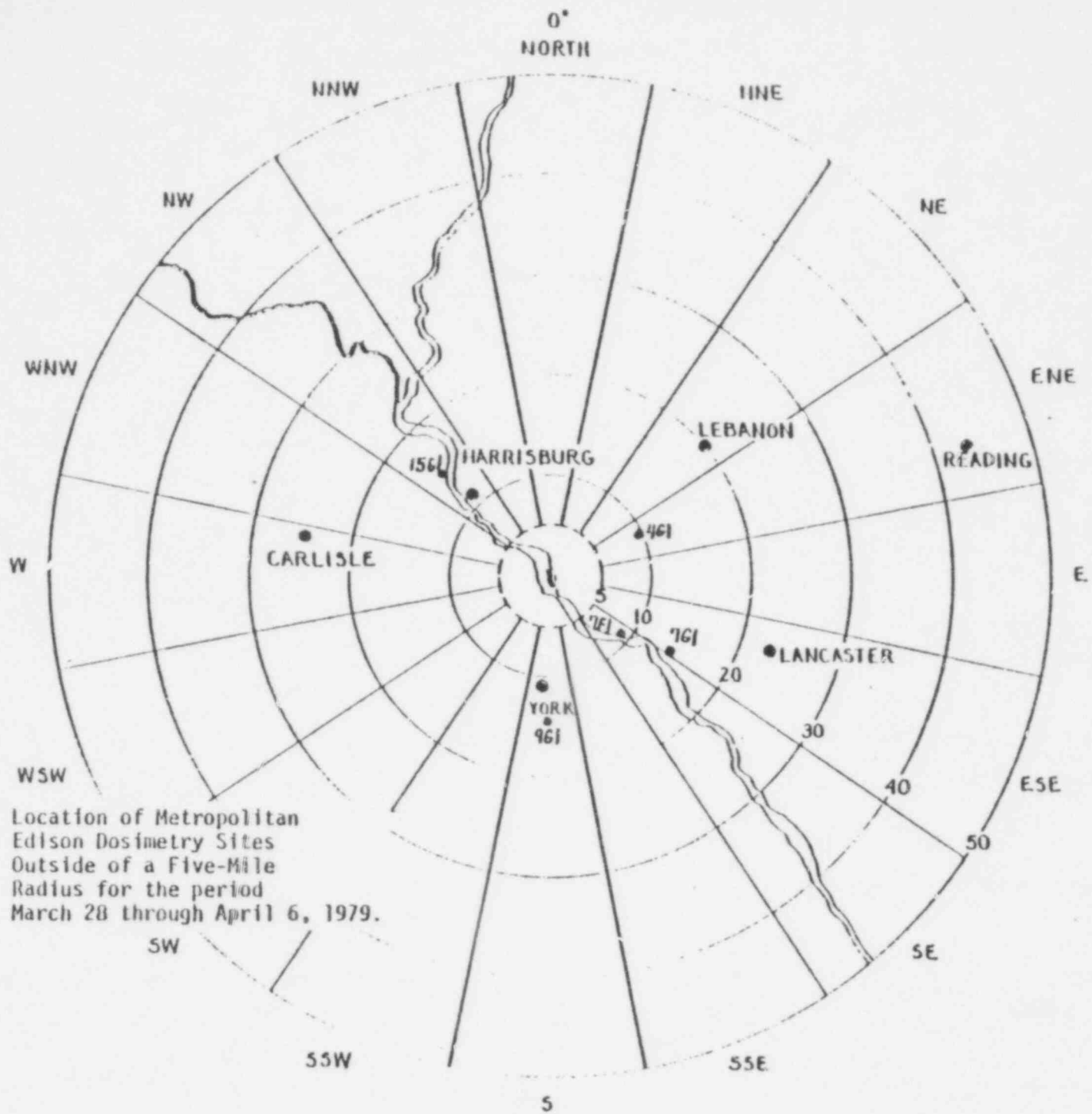


Figure 3-2. Location of Metropolitan Edison Dosimetry Sites Within a Five-Mile Radius for the Period March 28 through April 6, 1979.



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Figure 3-3. Location of Metropolitan Edison Dosimetry Sites Outside of a Five-Mile Radius for the period March 28 through April 6, 1979.

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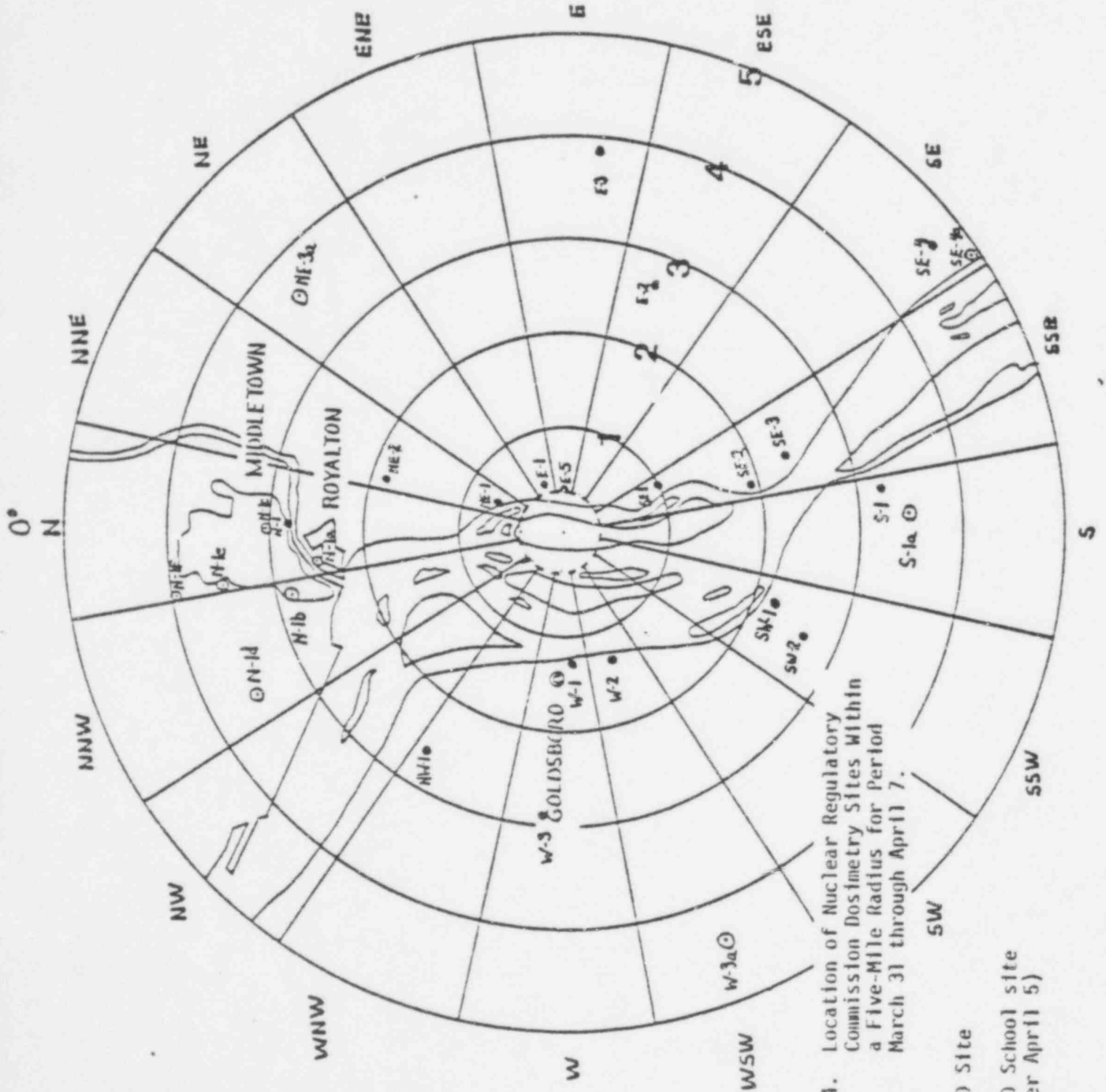


Figure 3-4. Location of Nuclear Regulatory Commission Dosimetry Sites Within a Five-Mile Radius for Period March 31 through April 7.

- NRC TLD Site
- ⊙ NRC TLD School site (After April 5)

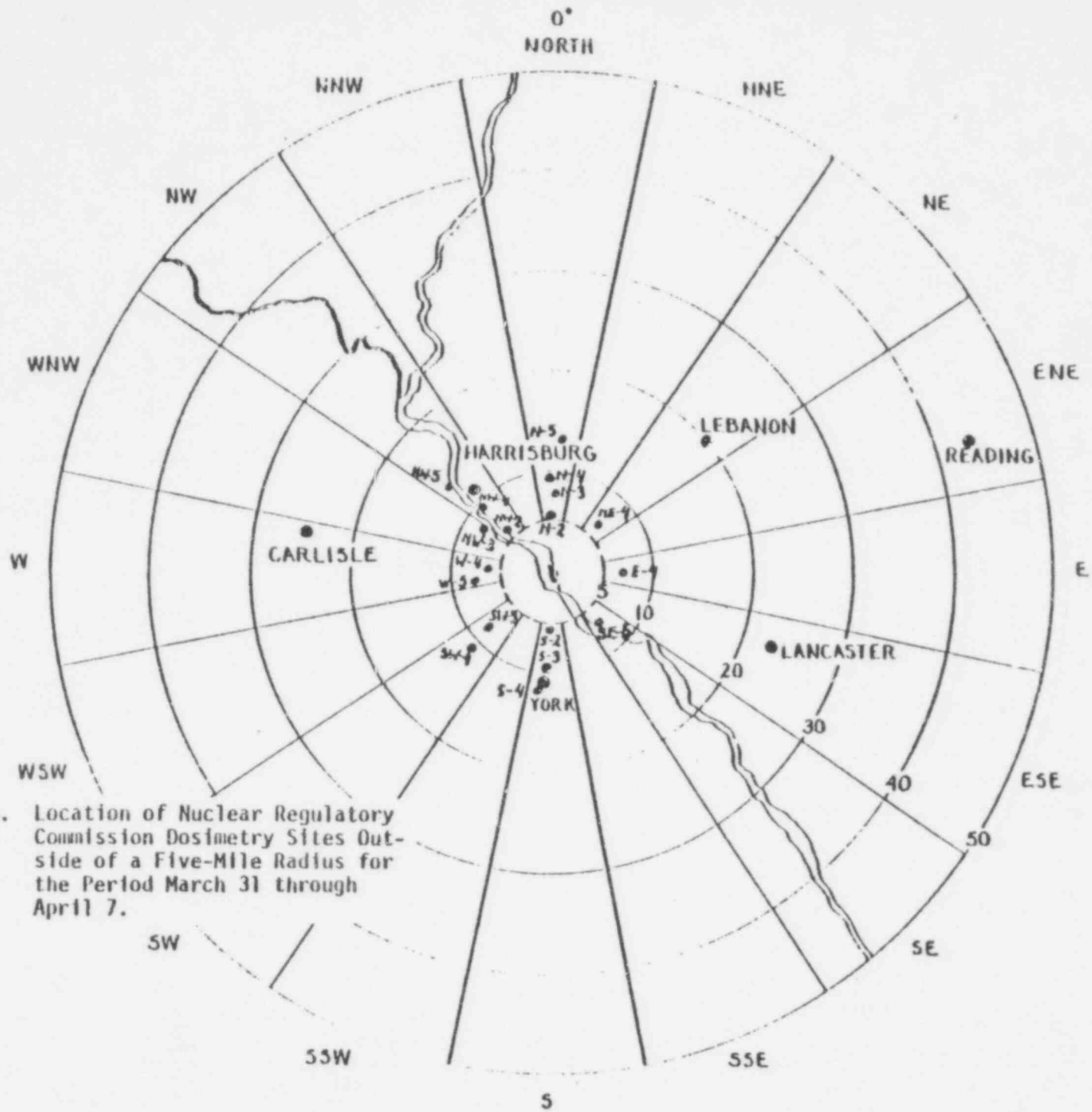


Figure 3-5. Location of Nuclear Regulatory Commission Dosimetry Sites Outside of a Five-Mile Radius for the Period March 31 through April 7.

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