

CERTIFIED

ACRS-2198
PDR 672484

5-17-84

DATE ISSUE: 5/3/84

PROPOSED MEETING MINUTES ON
ACRS EXTREME EXTERNAL PHENOMENA SUBCOMMITTEE
APRIL 4, 1984 - WASHINGTON, D.C.

The ACRS Subcommittee on Extreme External Phenomena met on April 4, 1984 at 1717 H Street, N.W., Washington, D.C. The purpose of this meeting was to review the generic methodology for developing the design basis severe winds for SEP plants and to review the specific applications for Ginna Nuclear Power Plant. The ACRS Subcommittee heard presentations from representatives of NRR, RES, and Rochester Gas & Electric Corporation.

A copy of the notice for the meeting is included as Attachment A. A list of attendees is included as Attachment B. The schedule for this meeting is included as Attachment C, and the handouts for this meeting are included in the ACRS files. The meeting begin at 8:30 a.m. on April 4, 1984, with a short executive session in which Dr. Okrent, the Subcommittee Chairman, summarized the objectives of the meeting. The meeting was adjourned at approximately 5:00 p.m. and was conducted in open session. Dr. R. Savio was the Designated Official for this meeting.

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Certified By Bjt

NRC Staff Summary, C. Grimes and D. Persinki, NRC/NRR

Mr. Grimes and Mr. Persinki summarized the basis for the SEP plants review of tornado and wind hazards for SEP Plants. The plants were evaluated against Regulatory Guide 1.76 which specifies that design basis events be selected either on the basis of (1) the "three region" deterministic model specified in the Regulatory Guide, or (2) by the development of a site specific design basis tornado which has the estimated recurrence frequency of 10^7 year. When neither of these criteria can be met, the plant in question has been upgraded to the extent that tornadoes will not be a dominant contributor to the risk of core melt. The level and nature of the upgrade is determined on the basis of a value/impact analysis. Mr. Grimes and Mr. Persinki noted that the methodology used by the NRC Staff to develop design basis tornado winds would be compared to the methodology of McDonald and to the methodology of Reg. Guide 1.76.

Status of Tornado Research Activities, by R. Kornasiewicz, NRC/RES

Mr. Kornasiewicz stated that NRC/RES currently has an ongoing program which addresses severe meteorological events. The program is designed to

obtain information concerning the nature of these phenomena and to develop a data base concerning the frequency of occurrence, severity, and spacial and temperal distribution of these events. The data base will be developed with the intent that it can be used in making probabilistic risk assessments of the risks to nuclear power plants. The programs are summarized on pages 1 thru 8 of Attachment D. It is intended that one of the results of the tornado research programs will be the development of the capability to decide whether or not provisions are needed to the Reg. Guide 1.67, which is currently used in the tornado design.

NRC Staff Methodology for the Development of Design Basis Tornado Winds,
by E. Markee, NRC/NRR

Mr. Markee discussed the methods used by NRR to evaluate tornado hazard to the Ginna Plant. These general methods were used for the evaluation of all the SEP plants. Records on the severity and occurrence of the tornado have been maintained in the United States for some time. It generally concurred in that the record of the events which occurred from 1950 until the present time are well analyzed and reasonably complete. The NRC in their computations uses the data base on tornado's which have occurred between 1954 and 1982 (See Figure 9 - Attachment D). The use of Reg. Guide 1.76 is specified in the Standard Review Plan as being an acceptable method. The basis for this guide is documented in WASH-1300.

The use of this Reg. Guide leads to a design basis windspeed of 360 miles per hour (total windspeed) or as an alternate the development of site specific evaluation of tornado hazard. This last method was what was used for the SEP plants. The regional data from the period of tornado record from 1954 to 1982 was used to select a homogenous region about the Ginna site and to establish the expected recurrence interval for different severity tornado at the Ginna site. The data base from 1954 to the present is believed to be adequate and representative of what would be expected in the next several decades. Comparisons of the results obtained through the use of the McDonald methodology and the results obtained from the NRC Staff methodology are shown on Figure 10 of Attachment D. Comparisons of the NRR Staff and McDonald evaluation at windspeed at different SEP sites are shown on page 11 of Attachment D.

Rochester Gas & Electric Evaluation of the Tornado Hazard at the Ginna Plant, by L. Twisdale, G. Wrobel, and J. Stevenson, RG&E

The representatives of the Rochester Gas & Electric (RG&E) described their evaluation of the tornado hazard at the Ginna Plant. The existing data base for tornado occurrence in region of the Ginna Plant has been evaluated and the Ginna Licensee has concluded that a 132 MPH Tornado wind is an adequate design basis tornado windspeed. The 132 MPH wind

corresponds to a recurrence interval of 10^{-5} year (at a 95% confidence level). The calculations were performed by the Rochester Gas & Electric Consultant, Dr. Twisdale. The results of his calculations are shown on page 12 of Attachment D. The Licensee has committed to a structural upgrading program in which the 132 MPH tornado wind will be used as a design basis with stress analysis will be made on an elastic range only basis. The Licensee believes that on a best-estimate basis, the plant could withstand a 200 MPH tornado wind before suffering damage to component and systems which are needed for safe shutdown. The NRC Staff is basically in agreement with the Licensee's conclusion.

Savio

onal privacy; and (3) information disclosure of which would significantly frustrate implementation of proposed agency action; pursuant to authority granted me by the Chairman's Delegation of Authority to Close Advisory Committee Meetings, dated January 15, 1978, I have determined that these meetings will be closed to the public pursuant to subsection (c)(4), (6) and (E)(B) of section 552B of Title 5, United States Code.

Further information about these meetings can be obtained from Mr. Stephen J. McCleary, Advisory Committee Management Officer, National Endowment for the Humanities, Washington, D.C. 20506, or call (202) 786-0322.

Stephen J. McCleary,

Advisory Committee Management Officer.

[FR Doc. 84-7306 Filed 3-15-84 8:45 am]

BILLING CODE 7536-01-M

NATIONAL SCIENCE FOUNDATION

Advisory Panel for Biotic Systems and Resources Subpanel for Marine Biological Laboratories; Meeting

In accordance with the Federal Advisory Committee Act, as amended, Pub. L. 92-463, the National Science Foundation announces the following meeting:

Name: Subpanel for Marine Biological Laboratories

Date and time: April 2 & 3, 1984—8:30 a.m. to 5:00 p.m. each day

Place: Room 1141, National Science Foundation, 1800 G St., NW., Washington, D.C. 20550

Type of meeting: Closed

Contact person: Dr. James C. Tyler, Program Director, Biological Research Resources (202) 357-7475, Room 1140, National Science Foundation, Washington, D.C. 20550

Purpose of subpanel: To provide advice and recommendations concerning support for marine biological laboratories

Agenda: Review and evaluation of proposals for the purchase of major equipment, refurbishing of facilities, and acquisition of other scientific tools important to research at marine biological laboratories as part of the selection process of awards

Reason for closing: The proposals being reviewed include information of a proprietary or confidential nature, including technical information: financial data, such as salaries; and personal information concerning individuals associated with the proposals. These matters are within exemptions (4) and (6) of 5 U.S.C. 552b(c), Government in the Sunshine Act

Authority to close meeting: This determination was made by the Committee Management Officer pursuant to provisions of Section 10(d) of Pub. L. 92-463. The Committee Management Officer was delegated the authority to make such determinations by the Director, NSF, on July 6, 1979.

Dated: March 13, 1984.

M. Rebecca Winkler,

Committee Management Coordinator.

[FR Doc. 84-7161 Filed 3-15-84 8:45 am]

BILLING CODE 7555-01-M

Subpanel on Political Science of the Advisory Panel for Social and Economic Science; Meeting

In accordance with the Federal Advisory Committee Act, Pub. L. 92-463, as amended, the National Science Foundation announces the following meeting:

Name: Subpanel on Political Science of the Advisory Panel for Social and Economic Science.

Date and Time: April 2 and 3, 1984, 9:00 a.m. to 5:00 p.m.

Place: Room 643, National Science Foundation, 1800 G St., NW., Washington, D.C. 20550.

Type of Meeting: Closed.

Contact Persons: Dr. Frank P. Scioli, Jr., Acting Program Director and Dr. William Mishler, Associate Program Director, Political Science Program, Washington, D.C. 20550, telephone (202) 357-7534.

Purpose of Subcommittee: To provide advice and recommendations concerning research in Political Science.

Agenda: Closed, to review and evaluate research proposals as part of the selection process for awards.

Reason for Closing: The proposals being reviewed include information of a proprietary or confidential nature, including technical information: financial data, such as salaries; and personal information concerning individuals associated with the proposals. These matters are within exemptions (4) and (6) of 5 U.S.C. 552b(c), Government in the Sunshine Act.

Authority to Close Meeting: This determination was made by the Committee Management Officer pursuant to provisions of Section 10(d) of Pub. L. 92-463. The Committee Management Officer was delegated the authority to make such determinations by the Director, NSF, on July 6, 1979.

Dated: March 13, 1984.

M. Rebecca Winkler,

Committee Management Coordinator.

[FR Doc. 84-7160 Filed 3-15-84 8:45 am]

BILLING CODE 7555-01-M

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards, Subcommittee on Extreme External Phenomena; Meeting

The ACRS Subcommittee on Extreme External Phenomena will hold a meeting on April 4, 1984, Room 1046, 1717 H Street, NW., Washington, DC.

In accordance with the procedures outlined in the Federal Register on September 28, 1983 (48 FR 44291), oral or written statements may be presented by members of the public, recordings will be permitted only during those portions of the meeting when a transcript is being kept, and questions may be asked only by members of the Subcommittee, its consultants, and Staff. Persons desiring to make oral statements should notify the Designated Federal Employee as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements.

Visual Arts Panel; Meeting

Pursuant to Section 10 (a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), as amended, notice is hereby given that a meeting of the Visual Arts Panel (Critical Writing Fellowships Section) to the National Council on the Arts will be held on April 4-6, 1984, from 9:00 a.m.—6:00 p.m. in room 730 of the Nancy Hanks Center, 1100 Pennsylvania Avenue, NW., Washington, DC 20506.

This meeting is for the purpose of panel review, discussion, evaluation, and recommendation on applications for financial assistance under the National Foundation on the Arts and the Humanities Act of 1965, as amended, including discussion of information given in confidence to the agency by grant applicants. In accordance with the determination of the Chairman published in the Federal Register of February 13, 1980, these sessions will be closed to the public pursuant to subsections (c)(4), (6) and 9(b) of section 552b of title 5, United States Code.

Further information with reference to this meeting can be obtained from Mr. John H. Clark, Advisory Committee Management Officer, National Endowment for the Arts, Washington, DC 20506, or call (202) 682-5433.

Dated: March 8, 1984.

John H. Clark,

Director, Office of Council and Panel Relations, National Endowment for the Arts.

[FR Doc. 84-7274 Filed 3-15-84 8:45 am]

BILLING CODE 7537-01-M

Attachment A

The entire meeting will be open to public attendance.

The agenda for subject meeting shall be as follows:

Wednesday, April 4, 1984—8:30 a.m. until the Conclusion of Business

The Subcommittee will review the generic methodology for developing design basis severe winds for SEP plants and to review the specific application to Ginna.

During the initial portion of the meeting, the Subcommittee, along with any of its consultants who may be present, may exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Subcommittee will then hear presentations by and hold discussions with representatives of the NRC Staff, Industry, and other interested persons regarding this review.

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling or requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the cognizant Designated Federal Employee, Dr. Richard Savio (telephone 202/634-3267) between 8:15 a.m. and 5:00 p.m. EST.

Dated March 14, 1984

John C. Hoyle,

Advisory Committee Management Unit, et

(FR Doc. 84-7263 Filed 3-16-84 9:45 am)

BILLING CODE 7590-01-M

[Docket No. 50-322 OL]

Long Island Lighting Company;
(Shoreham Nuclear Power Station Unit 1); Oral Argument

Notice is hereby given that, in accordance with the Appeal Board's order of March 12, 1984, oral argument on the appeals taken from the Licensing Board's September 21, 1983 partial initial decision in this operating license proceeding will be held at 9:30 a.m. on Tuesday, March 27, 1984, in the NRC Public Hearing Room, Fifth Floor, East-West Towers Building, 4350 East-West Highway, Bethesda, Maryland.

Dated March 13, 1984

For the Appeal Board,

C. Jean Shoemaker,

Secretary to the Appeal Board

(FR Doc. 84-7263 Filed 3-16-84 9:45 am)

BILLING CODE 7590-01-M

[Docket No. 50-346]

Toledo Edison Company and the Cleveland Electric Illuminating Company; (Davis-Besse Nuclear Power Station, Unit No. 1); Modification of Order Confirming Licensee Commitments on Post-TMI Related Issues

I

Toledo Edison Company and Cleveland Electric Illuminating Company (the licensees) are holders of Facility Operating License No. NPF-3 which authorizes the operation of the Davis-Besse Nuclear Power Station, Unit 1 (the facility) at steady-state power levels not in excess of 2772 megawatts thermal. The facility is a Babcock and Wilcox (B&W) designed pressurized water reactor (PWR) located at the licensees' site in Ottawa County, Ohio.

II

On March 14, 1983, the Nuclear Regulatory Commission (the Commission) issued an Order published in the Federal Register on March 28, 1983 (48 FR 12876), confirming licensee commitments to take action on post-TMI requirements set forth in NUREG-0737, "Clarification of TMI Action Plan Requirements." Subsequent to the Order, by letter dated December 21, 1983, Toledo Edison Company requested an extension of the completion date for the Post Accident Monitoring Items II.F.1.1 and II.F.1.2.

The Commission's evaluation of the revised commitment date for Items II.F.1.1 and II.F.1.2 is as follows:

As noted in the Order of March 14, 1983, the licensees were unable to complete these items during the 1982 refueling outage and performance of outage work was again scheduled for the 1983 refueling outage. Toledo Edison states that all necessary outage work to support the completion of the project by December 31, 1983, was performed during the 1983 refueling outage. However, additional problems severely disturbed the installation of the monitors in the stack and the completion of these items. These problems include component failures, difficulties in obtaining spare parts, electrical grounding problems requiring installation of a dedicated grounding system, software problems, and testing and modifications necessary to accurately monitor stack releases. Toledo Edison now believes that the Post Accident Monitoring Items II.F.1.1 and II.F.1.2 will be installed and operable by March 31, 1984. Toledo Edison indicated that the interim effluent monitors are operable in

accordance with the Order of March 14, 1983, and the capability for grab sampling is available with appropriate procedures for sampling. In addition, Toledo Edison indicated that the first channel of the new monitor was declared operable on January 25, 1984. These interim measures provide capability for monitoring the stack releases until both channels of the new system are declared operational.

We find, based on the above evaluation, that: (1) The licensees have taken corrective actions regarding the delay and have made a responsible effort to implement the NUREG-0737 requirements noted; (2) there is good cause for the delay (unexpected component failures, equipment availability problems, electrical grounding problems, software problems, and additional modifications necessary to measure releases); and (3) as noted above, interim compensatory measures have been provided.

III

Accordingly, pursuant to Sections 103, 161i, and 161o of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Parts 2 and 50, it is hereby ordered that:

Attachment 1 of the Commission's March 14, 1983 Order is revised to extend the completion date for Items II.F.1.1 and II.F.1.2 from December 31, 1983, to March 31, 1984, as indicated in the attachment to this Order.

The Order of March 14, 1983, except as revised herein, remains in effect in accordance with its terms.

IV

The licensees may request a hearing on this Order within 20 days of the date of publication of this Order in the Federal Register. Any request for hearing shall be submitted to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. A copy of the request shall be sent to the Executive Legal Director at the same address.

If a hearing is to be held, the Commission will issue an Order designating the time and place of any such hearing. If a hearing is held, the issue to be considered at such a hearing shall be whether this Order should be sustained.

This Order shall become effective upon the licensees' consent or upon expiration of the time within which the licensees may request a hearing or, if a hearing is requested by the licensees, on the date specified in an Order issued following further proceedings on this Order.

TIME 8:30 a.m.

MEETING ROOM 1046

DATE 4-4-84

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING

Extreme External Phenomena

ATTENDEES PLEASE SIGN BELOW

(PLEASE PRINT) NAME	BADGE NO.	AFFILIATION
1 <u>Rain</u>		<u>ACRS</u>
2 <u>D. T. Rawlini</u>		
3 <u>S. Seth</u>		<u>ACRS</u>
4 <u>W. P. Gammill</u>		<u>NRR</u>
5 <u>J. E. FAIROBENT</u>		<u>NRR</u>
6 <u>[unclear]</u>		<u>REIS</u>
7 <u>[unclear]</u>		<u>REIS</u>
8 <u>D. PersinKo</u>		<u>NRR/SEP8</u>
9 <u>L. I. GAMES</u>		<u>NRR/SEP8</u>
10 <u>[unclear]</u>		<u>NRR/MATB</u>
11 <u>E. H. MARKEE</u>		<u>NRR/METB</u>
12 <u>E. M. MCKENNA</u>		<u>NRR/ORB5</u>
13 <u>J. E. ARTHUR</u>		<u>ROCHESTER GAS & ELEC. CORP</u>
14 <u>[unclear]</u>		<u>FICHTER</u>
15 <u>[unclear]</u>		<u>[unclear]</u>
16 <u>G. A. FLANNERY</u>		<u>NORTHEAST UTILITIES</u>
17 <u>C. G. BELL</u>		<u>Northeast Utilities</u>
18 <u>G. DICK</u>		<u>NRR/ORB5</u>
19 <u>L. A. BENNETT</u>		<u>Southern California Edison Co</u>
20 <u>G. A. HARPER</u>		<u>Yankee Atomic Electric</u>
		<u>Attachment R</u>

TIME 8:30 a.m.

MEETING ROOM 1046

DATE 4-4-84

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING

Extreme External Phenomena

ATTENDEES PLEASE SIGN BELOW

(PLEASE PRINT)
NAME

BADGE NO.

AFFILIATION

(PLEASE PRINT) NAME	BADGE NO.	AFFILIATION
1 G.P. Rentschler		Gilbert Associates
2 R. BENWAY		ROCH. GAS & ELECTRIC CORP
3 L.A. SUCHESKI		GILBERT ASSOC.
4 Lawrence A. Tarschak		Applied Research Associates
5 CAROLINE S. SCHLASEMAN		MPR ASSOCIATES
6 JOHN D. STEVENSON		SA A
7 ROBERT F. SMITH		ROCH. GAS & ELECTRIC
8 ROBERT C. MCCRERY		RG+E
9 George Wrobel		RG+E
10 TERENCE R. WELLS		RG+E
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TIME 8:30 a.m.

MEETING ROOM 1046

DATE 4-4-84

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING

Extreme External Phenomena

ATTENDEES PLEASE SIGN BELOW

(PLEASE PRINT) NAME	BADGE NO.	AFFILIATION
1 [Signature]	0215	Taylor Assoc.
2 [Signature]	271	BECHTEL
3 George A. Harris	0231	Yankee Atomic
4 Laurence A. Bennett	E-0110	So. Cal. Edison Co.
5 JOHN E. ARTHUR	E-0214	Rock Gas & Elec.
6 [Signature]	E-0151	MFR ASSOC.
7 [Signature]	E-0126	RG+E
8 [Signature]	E-0111	WGE
9 [Signature]	10237	PG&E
10 [Signature]	E0175	RGE (ARA)
11 [Signature]	E-0148	RGE (GHI)
12 G. P. [Signature]	E-0147	RGE (GHI)
13 J. T. SCHNEFER	E0208	NWS
14 [Signature]	E-0182	RGE
15 [Signature]	E-0174	RA
16 George W. [Signature]	E0143	RGE
17 R. Martin [Signature]	E0242	NWS/Blum
18 [Signature]	E-0133	UVA
19 C. A. [Signature]	E0240	Northwest Utilities
20 G. A. [Signature]	E0236	Northwest Utilities

TIME 8:30 a.m.

MEETING ROOM 1046

DATE 4-4-84

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING

Extreme External Phenomena

ATTENDEES PLEASE SIGN BELOW

(PLEASE PRINT) NAME	BADGE NO.	AFFILIATION
1 RE Schmitt	E-0227	KMC Inc
2 L Cannon	E-215	WRG Capital
3 CA Mazzola	E-146	STONE & W Elster
4 F. Figg	E-2101	NIMPC
5 Harry H. Vingt	E-0915	1. Broad Bank, 2. City of Montreal
6 S. Hill S. Hill	E-0176	N.R.S
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3/27/84

*** AGENDA ***

ACRS SUBCOMMITTEE MEETING ON EXTREME EXTERNAL PHENOMENA

APRIL 4, 1984 - WASHINGTON, D.C.

- | | | | |
|--|-------------------------|---------|------------------|
| 1. Opening Remarks | D. Okrent &
C. Siess | 15 Min. | 8:30 - 8:45 am |
| 2. Introduction | C. Grimes, NRR | 15 Min. | 8:45 - 9:00 am |
| A. SEP Approach to Tornado
and Wind Loads | | | |
| B. Discuss Agenda and Approach | | | |
| 3. Issues from October 1982 EEP
Subcommittee Meeting | D. Persinko,
NRR | 15 Min. | 9:00 - 9:15 am |
| 4. Status of Wind Hazard Research
Activities | R. Kornasiewicz,
RES | 15 Min. | 9:15 - 9:30 am |
| A. Completed Projects | | | |
| B. McDonald Methodology | | | |
| C. On-going Projects/
Completion Schedules | | | |
| 5. Analysis of Tornado Events | E. Markee, NRR | 45 Min. | 9:30 - 10:15 am |
| A. Tornado Records/Data
Collection | | | |
| B. Hazard Function Development | | | |
| ***** BREAK ***** | | 15 Min. | 10:15 - 10:30 am |
| 6. Licensing Criteria for Tornado
Events | E. Markee, NRR | 1 Hour | 10:30 - 11:30 am |
| A. WASH-1300 | | | |
| B. Regulatory Guide 1.76 | | | |
| C. Site Specific Applications | | | |
| D. Comparisons of Methodologies
to include Comparison of NRC
Staff Models with other
Tornado Hazard Probability
Models | | | |

Attachment C

Extreme External Phenomena Agenda

- 2 -

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|---|----------------------|----------------|------------------|
| 7. Site-Specific Tornado Event Analysis - GINNA | L. Twisdale, RG&E | 45 Min. | 11:30 - 12:15 pm |
| ***** LUNCH ***** | | 1 Hour | 12:15 - 1:15 pm |
| 8. Licensing Criteria for Tornado Effects | D. Persinko, NRR | 30 Min. | 1:15 - 1:45 pm |
| A. Structural Capacity | | | |
| B. Tornado Missiles | | | |
| C. Safe Shutdown Capability | | | |
| D. Qualitative Evaluation of Margins | | | |
| 9. Site-Specific Tornado Effect Analysis | RG&E | 45 Min. | 1:45 - 2:30 pm |
| 10. Summary and Conclusions | C. Grimes, NRR | 15 Min. | 2:30 - 2:45 pm |
| 11. General Discussion, Consultants Comments, and Conclusions | D. Okrent & C. Siess | 1 Hr & 30 Min. | 2:45 - 4:15 pm |

ACRS Subcommittee Chairman	-	D. Okrent
NRR Contact	-	D. Persinko, 301/492-7458
ACRS Contact	-	R. Savio, 202/634-3267

SNOW AND PRECIPITATION

RESEARCH COMPLETED

- NUREG/CR-1339 ESTIMATING WATER EQUIVALENT SNOW DEPTH FROM RELATED METEOROLOGICAL VARIABLES (MAY 1980)
- NUREG/CR-1486 SEASONAL VARIATION OF 10-SQUARE-MILE PROBABLE MAXIMUM PRECIPITATION ESTIMATES - UNITED STATES EAST OF THE 105TH MERIDIAN, HYDROMETEOROLOGICAL REPORT No. 53 (JUNE 1980)
- NUREG/CR- 2638 SNOW LOADS FOR THE DESIGN OF NUCLEAR POWER PLANT STRUCTURES (APRIL 1982)

9/1/82

LIGHTNING AND THUNDERSTORMS

RESEARCH COMPLETED

- NUREG/CR-1024 AN INITIAL ASSESSMENT OF FLASH DENSITY AND PEAK CURRENT CHARACTERISTICS OF LIGHTNING FLASHES TO GROUND IN SOUTH FLORIDA (SEPTEMBER 1979)
- NUREG/CR-2013 A LIGHTNING DAMAGE ASSESSMENT OF THE UNITED STATES - JANUARY 1968 - DECEMBER 1977 (APRIL 1981)
- NUREG/CR-2252 NATIONAL THUNDERSTORM FREQUENCIES FOR THE CONTIGUOUS UNITED STATES (NOVEMBER 1981)

ONGOING PROJECTS

- LIGHTNING STRIKE DENSITY FOR THE CONTIGUOUS UNITED STATES FROM THUNDERSTORM DURATION RECORDS TO BE COMPLETED BY APRIL 30, 1984

OTHER EXTREME WEATHER STUDIES

PROJECTS COMPLETED

TEMPERATURE

NUREG/CR-1390 PROBABILITY ESTIMATES OF TEMPERATURE EXTREMES FOR THE CONTIGUOUS UNITED STATES (MAY 1980)

BLOWING DUST AND SAND

NUREG/CR-3211 A DUST CLIMATOLOGY OF THE WESTERN UNITED STATES (APRIL 1983)

SUSTAINED WINDS (NON-TORNADIC)

RESEARCH COMPLETED

- NUREG/CR-2639 HISTORICAL EXTREME WINDS FOR THE UNITED STATES - ATLANTIC AND GULF OF MEXICO COASTLINES (MAY 1982)
- NUREG/CR-2390 HISTORICAL EXTREME WINDS FOR THE UNITED STATES - GREAT LAKES AND ADJACENT REGIONS (AUGUST 1982)

ONGOING PROJECTS

- RELATIONSHIPS BETWEEN " FASTEST-MILE " WIND SPEEDS AND WIND SPEEDS FOR OTHER TIME DURATIONS WORK BEING DONE IN-HOUSE, EXPECTED TO BE PUBLISHED AS A NUREG REPORT. COMPLETION PROJECTED DATE: DECEMBER 1984

TORNADO RESEARCH

PROJECTS COMPLETED

TORNADO PARAMETERS FOR NUCLEAR POWER PLANTS (UNIV. OF CHICAGO)
PROJECT RAN FROM NOVEMBER 1, 1974 THRU SEPTEMBER 30, 1982

RESULTS

RESULTS OF THIS PROJECT WERE PUBLISHED IN 31 SATELLITE & MESOMETEOROLOGY RESEARCH PAPERS (SMRP)

FIVE MULTI-COLORED MAPS WERE PREPARED

OTHER REPORTS PUBLISHED IN AMERICAN METEOROLOGICAL SOCIETY JOURNALS, CONFERENCE PRE-PRINT VOLUMES AND THE SOCIETY'S BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY

TORNADO VORTEX MODELS WERE DEVELOPED

COMPUTER-GENERATED MAPS OF U.S. TORNADO OCCURRENCES 1916 - 1978

PREPARED PRELIMINARY VERSION OF THE DAMAGE AREA PER PATH LENGTH (DAPPL) TORNADO DATA TAPE

TORNADOES

PROJECTS COMPLETED- RESULTS PUBLISHED AS NUREG/CR REPORTS

- NUREG/CR-0363 THREE SCALES OF MOTIONS ASSOCIATED WITH
TORNADOES (SEPTEMBER 1978)
- NUREG/CR-0383 TORNADO DAMAGE AT THE GRAND GULF, MISSISSIPPI
NUCLEAR POWER PLANT SITE; AERIAL AND GROUND
SURVEYS (SEPTEMBER 1978)
- NUREG/CR-0556 AERODYNAMIC CONSIDERATIONS ON THE INJECTION
OF TORNADO-GENERATED MISSILES FROM GROUND
LEVEL INTO TORNADO FLOW FIELDS (JUNE 1979)
- NUREG/CR-1183 LABORATORY SIMULATION OF STEADY TORNADIC
WIND LOADS ON STRUCTURES (DECEMBER 1979)
- NUREG/CR-1585 MODELING TORNADO DYNAMICS (SEPTEMBER 1980)
- NUREG/CR-1816 DETERMINATION OF TORNADO WIND SPEEDS FROM
TORNADIC SOUNDS (FEBRUARY 1981)
- NUREG/CR-1840 A NUMERICAL MODEL PERTAINING TO THE MULTIPLE
VORTEX PHENOMENON (JANUARY 1981)
- NUREG/CR-2014 KINEMATICS OF TRANSLATING TORNADO WIND FIELDS
(APRIL 1981)
- NUREG/CR-2358 SUBREGIONAL VARIABILITY IN MISSOURI TORNADO
STATISTICS (NOVEMBER 1981)
- NUREG/CR-2359 ATMOSPHERIC STRUCTURE PRIOR TO TORNADOES AS
DERIVED FROM PROXIMITY AND PRECEDENT UPPER
AIR SOUNDINGS (MAY 1982)
- NUREG/CR-2556 LIDAR VELOCITY MEASUREMENTS OF WATERSPOUTS
AND AN ONSHORE WIND (FEBRUARY 1982)
- NUREG/CR-2557 SIMULATED TORNADO WIND FIELDS AND DAMAGE
PATTERNS (FEBRUARY 1982)
- NUREG/CR-3058 A METHODOLOGY FOR TORNADO HAZARD PROBABILITY
ASSESSMENT (OCTOBER 1983)

TORNADOES

PROJECTS COMPLETED- RESULTS PUBLISHED IN OTHER PUBLICATIONS

NOAA TECHNICAL MEMORANDUM ERL NSSL-80
THE UNION CITY, OKLAHOMA TORNADO OF 24 MAY 1973 (DECEMBER 1976)

NOAA TECHNICAL MEMORANDUM ERL NSSL-82
THE TORNADO: AN ENGINEERING-ORIENTED PRESPECTIVE (DECEMBER 1977)

NOAA TECHNICAL MEMORANDUM ERL NSSL-90
SUMMARY OF AEC-ERDA-NRC SUPPORTED RESEARCH AT NSSL 1973-1979
(MARCH 1981)

SATELLITE & MESOMETEOROLOGY RESEARCH PROJECT PAPER No.156
MANUAL OF DOWNBURST IDENTIFICATION FOR PROJECT NIMROD
(MAY 1978)

SATELLITE & MESOMETEOROLOGY RESEARCH PROJECT PAPER No.165
WORKBOOK OF TORNADOES AND HIGH WINDS FOR ENGINEERING APPLI-
CATIONS (SEPTEMBER 1978)

OTHER S&MRP RESEARCH PROJECT PAPERS, INCLUDING:

- No. 132 THE GOTHENBURG TORNADO FAMILY OF JUNE 18, 1975
(OCTOBER 1976)
- No. 146 ANTICYCLONIC TORNADOES (APRIL 1977)
- No. 155 A SITE-SPECIFIC STUDY OF WIND AND TORNADO PROB-
ABILITIES AT THE WIPP SITE IN SOUTHEAST NEW
MEXICO (FEBRUARY 1978)
- No. 161 DOWNBURSTS AND TORNADOES OF 6 AUGUST 1977 NEAR
SPRINGFIELD, ILLINOIS (NOVEMBER 1978)
- No. 162 AERIAL SURVEY OF GRAND GULF PLANT AND VICINITY
AFTER THE APRIL 17, 1978 TORNADO (MAY 1978)
- No. 167 THE CABOT, ARKANSAS TORNADO OF MARCH 29, 1978
(AUGUST 1978)

PAPER PUBLISHED IN WIND ENGINEERING

TORNADO TRACK CHARACTERISTICS AND HAZARD PROBABILITIES (1980)

TORNADO RESEARCH PROGRAM

ONGOING PROJECTS

NUREG/CR-3670 VIOLENT TORNADO CLIMATOGRAPHY, 1880-1982 (PNL)

STATUS: WORK HAS BEEN COMPLETED AND DRAFT REPORT RECEIVED.
NUREG/CR EXPECTED TO BE PUBLISHED IN APRIL 1984

NEAR GROUND TORNADO WIND FIELDS (TTU)

STATUS: WORK HAS BEEN COMPLETED. DRAFT REPORT EXPECTED
BY APRIL 1, 1984. NUREG/CR EXPECTED TO BE PUB-
LISHED IN LATE APRIL OR EARLY MAY, 1984

TORNADO WIND SPEED ASSESSMENT (UNIV. OF CHICAGO)

STATUS: WORK IS ONGOING. ORIGINAL COMPLETION DATE WAS
SEPTEMBER 30, 1984. CONTRACTOR HAS REQUESTED AN
EXTENSION TO JANUARY 31, 1985

- TASKS: COLLECT AND MAINTAIN TORNADO DATA
- REFINE TORNADO HAZARD PROBABILITY MODEL
- PREPARE ISOPLETH MAPS OF TORNADO WINDSPEEDS
- DAMAGE SURVEY OF SIGNIFICANT TORNADOES
- PHOTOGRAMMETRIC ANALYSIS OF TORNADO MOVIES
- TORNADO VORTEX MODELS
- REVISION OF TORNADO WORKBOOK
- COORDINATION WITH OTHER NRC CONTRACTORS

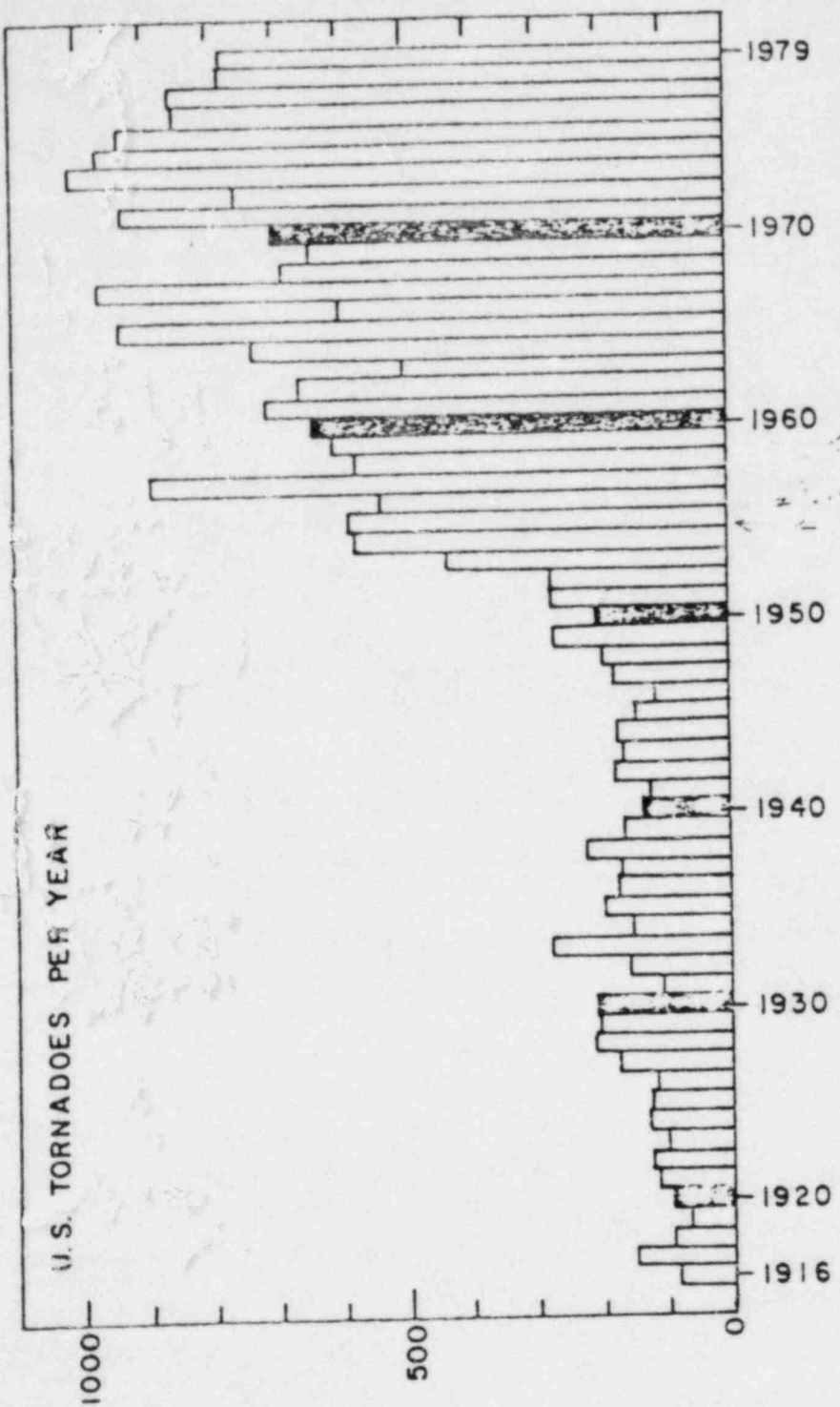


FIGURE 4. ANNUAL FREQUENCY OF U.S. TORNADOES FROM 1916 TO 1978

FROM McDONALD

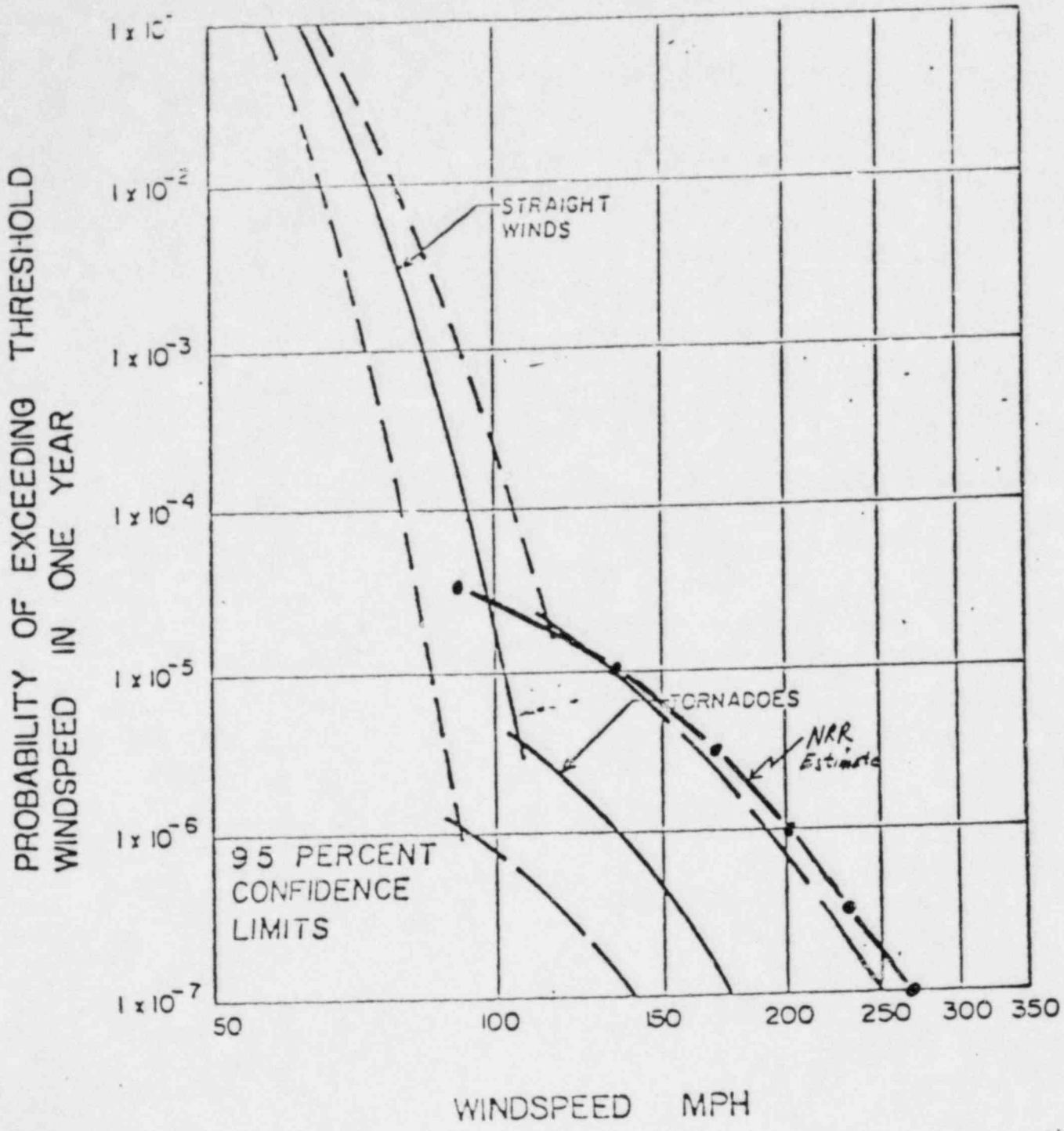


FIGURE 3.3 TORNADO AND STRAIGHT WIND HAZARD PROBABILITY MODEL FOR GINNA (BROOKWOOD) POWER REACTOR SITE, NEW YORK

ii

COMPARISON BETWEEN NRR STAFF AND MC DONALD EVALUATIONS OF
WIND SPEED (MPH) AT A PROBABILITY OF 10^{-5} /YR

<u>PLANT SITE</u>	McDONALD		NRR STAFF
	<u>EXPECTED</u>	<u>UPPER 95%</u>	
BIG ROCK PT.	140	215	163
DRESDEN	195	242	234
GINNA	100	132	133
HADDAM NECK (& MILLSTONE)	120	170	168
LACROSSE	175	215	208
YANKEE ROWE	122	174	163
OYSTER CREEK	102	124	155
PALISADES	195	242	275
SAN ONOFRE	74	113	<76
INDIAN POINT	113	165	104

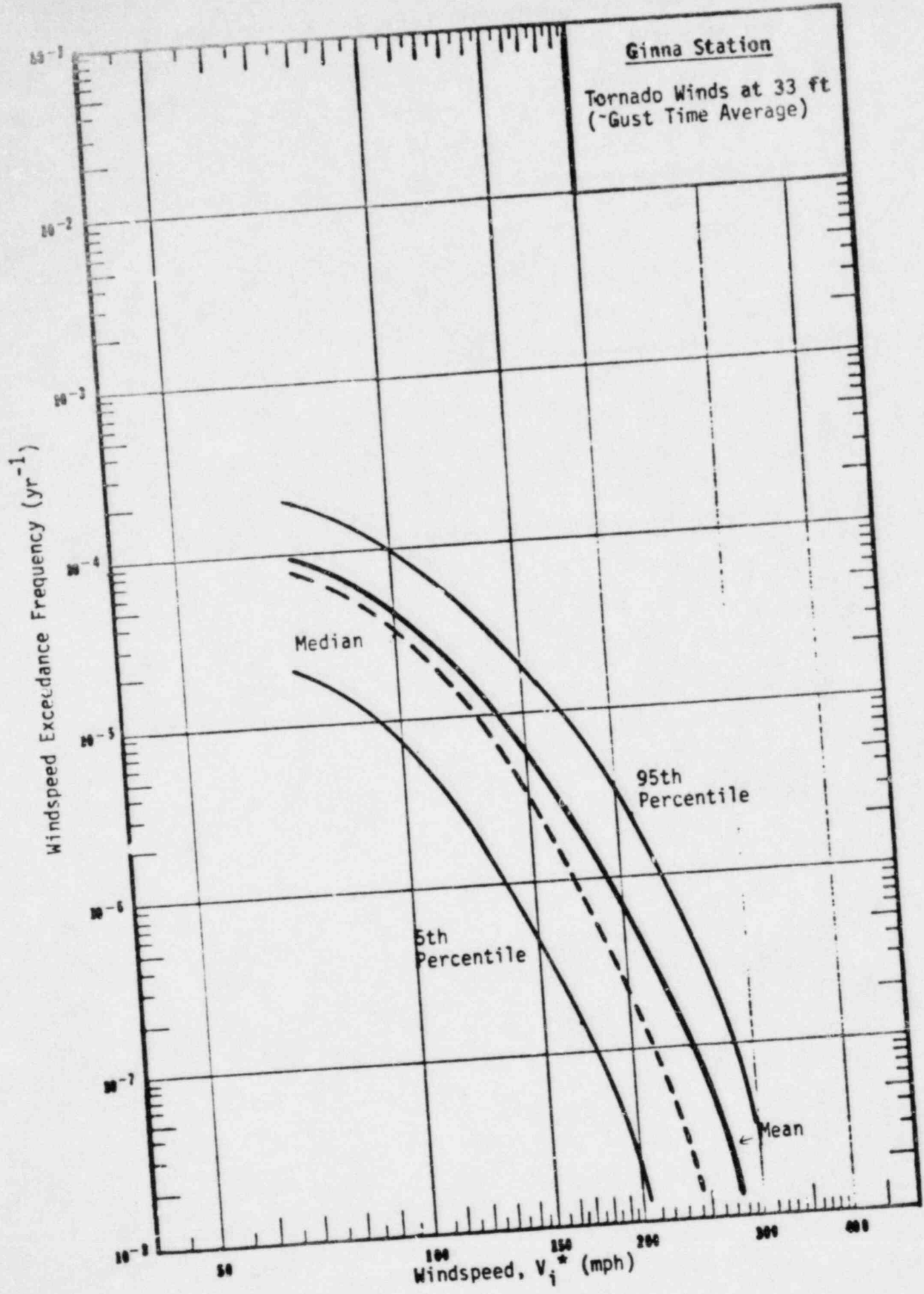


Figure IV-2. Probability Distribution of Windspeed Exceedance Frequencies
IV-4