CNS SITE SPECIFIC
WEATHER CALCULATION

CNS SITE SPECIFIC
WEATHER CALCULATION

CALCULATION COVER SHEET

CALCULATION IDENTIFICATION NO. NPPI-SBØ-005 REVISION NO. 0

PURPOSE OF CALCULATION APPLY COOPER SITE SPECIFIC WEATHER DATA TO DETERMINE THE REQUIRED STATION BLACKOUT COPING CATEGORY

SCOPE OF REVISION (INCLUDING AFFECTED PAGES)

NEW CALCULATION

~~REVISION~~ CALCULATION IMPACT ON RESULTS

CALCULATION NPPI-SBØ-001, RESULTS 1C & 1E ARE IMPACTED, AS COOPER WEATHER DATA ALLOW CLASSIFICATION AS A P1 PLANT. PART 4 OF THAT CALC. IS ALSO IMPACTED AS THE ALLOWABLE EDG TARGET RELIABILITY IS NOW 0.95.

ORIGINATOR OF THIS REVISION E E Holcomb / 6-28-89

Signature/Date

REVIEWER OF THIS REVISION [signature] 7/11/89

Signature/Date

APPROVER OF THIS REVISION [signature] 7/13/89

Signature/Date

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ENERCON SERVICES, INC.

SHEET 1 OF 18

JOB NO. NP-108 DATE 6/7/89

PROJECT STATION BLACKOUT (SBO)

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR [signature]

REVIEWER [signature] 7/11/89 APPROVED [signature] 7/11/89

CALCULATION NO. NPPI-SBO-005

CALCULATION NPPI-SBO-005

COOPER SITE-SPECIFIC WEATHER EVALUATION

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ENERCON SERVICES, INC.

SHEET 2 OF 18

JOB NO. NP-108 DATE

PROJECT STATION BLACKOUT (SBO)

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR [signature] 7/13/89

REVIEWER [signature] 7/11/89 APPROVED [signature] 7/13/89

CALCULATION NO. NPPD-SBO-005

REVIEWER'S STATEMENT

A DETAILED REVIEW AND CHECK OF THE ENTIRE CALCULATION WAS MADE. MATH WAS VERIFIED AS WELL AS THE METHODOLOGY USED IN THE CALCULATION. ALL ASSUMPTIONS WERE REVIEWED AND DETERMINED TO BE REASONABLE. I AM IN AGREEMENT WITH THE RESULTS AND CONCLUSIONS.

TABLE of CONTENTS

ATTACHMENTS

JOB NO. NP-108 DATE 6/12/89

PROJECT STATION BLACKOUT (SBO)

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Blocomb

REVIEWER [illegible] 7/11/89 APPROVED

CALCULATION NO. NPP9 - SBO - 005

OBJECTIVE - Relative to station blackout and the guidelines presented in NUMARC 87-00, the purpose of this calculation is application of Cooper Nuclear Station (CNS) site-specific weather data to determine more realistic severe weather (SW) and extremely severe weather (ESW) group categorizations, pursuant to a determination of the requisite emergency diesel generator (EDG) reliability.

OUTLINE - This calculation involves the following principal steps:

1) A brief introduction is provided.

2) To determine the severe weather group, Cooper wind speed data are evaluated. A method is provided to determine wind speed at other elevations.

3) Tornado data in the vicinity of Brownville, Nebraska are examined. These data enable assignment of an extremely severe weather group for Cooper.

4) For a 4-hour SBO coping duration, the results from steps (2) and (3) yield the requisite EDG target reliability.

NOTE: For convenient referencing and to enhance the standalone content of this calculation, key tables from NUMARC 87-0 are provided in Attachment 4.

ENERCON SERVICES, INC.

SHEET 5 OF 18

JOB NO. NP-108 DATE 6/12/89

PROJECT SBØ

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR [illegible]

REVIEWER 7/11/89 [illegible] APPROVED

CALCULATION NO. NPPT-SBØ-005

1.0 INTRODUCTION

Using the methods outlined in Chapter 3 of NUMARC 87-00 (Reference 1), weather data, power grid design, availability of emergency AC (EAC) power supplies and diesel generator test data all factor into the determination of the required SBØ coping duration category and target emergency diesel generator (EDG) reliability. An SBO coping evaluation has been completed for Cooper, see Reference 2.

In calculation NPPT-SBØ-001 (provided in Appendix A of Reference 2) the weather data evaluation was based directly upon the information provided in NUMARC 87-00. For Cooper, this resulted in a severe weather (SW) group of '3', an extremely severe weather (ESW) group of '3' and a required SBØ coping duration category of '4 HRS.' at a minimum allowable EDG reliability of 0.975.

The weather data presented in NUMARC 87-00 are conservative. (See, for example, parameter L3 of NUMARC 87-00 Table 3-3, presented in Att. 4, where an expected frequency of occurrence of once every two years (i.e. probability of 0.5) is assigned to the severe storm contributor.)

The guidelines in NUMARC 87-00 themselves allow for more detailed evaluations based on site specific weather data, to ascertain if more realistic values can be calculated for weather

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group categorizations, and to determine the impact upon the requisite EDG reliability. Therefore, Cooper site-specific wind speed and tornado data have been researched and are provided in this calculation to support updated determinations of the aforementioned key parameters.

ENERCON SERVICES, INC.

SHEET 2 OF 18

JOB NO. NP-108 DATE 6/12/89

PROJECT SEQ

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Peterson

REVIEWER 7/11/89 MKM APPROVED

CALCULATION NO. NPPD-SEQ-005

2.0 SEVERE WEATHER EVALUATION

Wind speed data for CNS are provided in Attachment 1, from 1975 through 1987. Using the maximums from each year, Table 1 summarizes the peak, hourly average wind speeds. Data at the 10-meter and 35-foot levels are used interchangeably and are considered the regional basis. These data will be used to determine the wind speed at the 30-meter elevation. Conservatively, the 30-meter data will be used as the evaluation basis.

Pages 3-7 and 3-8 of NUMARC 87-00 (provided here in Att. 4) outline the method to determine the estimated frequency f of loss-of-offsite power due to severe weather, i.e.

(1) $f = (1.3 * 10^{-4}) * h_1 + b * h_2 + (1.2 * 10^{-2}) * h_3 + c * h_4$,

where, for Cooper,

h_1 = 30 inches (ANNUAL SNOWFALL FOR CNS, FROM TABLE 3-3 of 87-00)

b = 12.5 (SEE PART 1C of APP. A TO REF. 2 FOR JUSTIFICATION)

h_2 = 0.0002357 (TORNADOES of 'F2' SEVERITY or GREATER, SEE PART 3.0 and ATT. 3 HEREIN)

and c = 0. (CNS HAS NO VULNERABILITY TO SALT SPRAY).

For the CNS site-specific evaluation, we seek to determine h_3.

Parameter h_3 is the expected frequency of storms with winds between 75 and 124 mph at CNS. Using the annual hourly maxima* wind speeds provided in Table 2 and a conservative cutoff of 45 mph, $h_3 = 1/13 = 0.0769$.

Substitution into Eqn. (9) gives

$$\hat{\lambda} = (1.34 \times 10^{-4}) \times 30 + 12.5 \times 2.357 \times 10^{-4} + (1.2 \times 10^{-2}) \times 0.0769 = 0.0$$

$\Rightarrow$ $\hat{\lambda} = 0.0078$. At this value for $\hat{\lambda}$, Table 3-4 of Reference 1 indicates that CNS is in SW GROUP 2.*

Note that use of CNS site specific wind data has enabled classification into a less hazardous wind region compared to use of NWS 67-10 data for h_3.

The next few pages (Sections 2.1 and 2.1.1 provide details of the calculations to generate the numbers in Table 2 at the 30-meter elevation).

* Use of 'peak' wind speeds does not impact the results. Attachment 3, sheet 33, indicates that the probability of instantaneous wind speeds exceeding 75 mph is small. For instance, the probability of a peak wind > 73 mph is 2.592×10^{-4} in the vicinity of CNS. Attachment 3 is further discussed in Section 3.

2.1 WIND SPEED DATA AT ALTERNATE ELEVATIONS

It is possible to use wind speed data collected at one elevation to determine the wind speed at another elevation. The procedure for doing so is explained in Attachment 2. Replicating Eqn. 2.4.1 of Att. 2,

$$(2) \qquad U(z) = \frac{\ln z/z_0}{\ln 10/z_0} U(10) \quad , \text{ where}$$

z = height above ground (meters),

z_0 = roughness length (meters), and

U = wind speed; $U(z)$ and $U(10)$ to be expressed in the same units.

Note that '10' meters could be replaced by another elevation since it is merely a reference point.

2.1.1 SAMPLE CALCULATION

Choose z_o = 0.05 meter for the roughness length in an open terrain, with confidence that the answer will be correct within ±1 to 2%. (see Att. A). Using the 1987 10-meter data from Table 1, and selecting 30 meters as the elevation for which it is desired to calculate the wind speed, Equation (7) gives

$$u(30) = \frac{\ln 30/0.05}{\ln 10/0.05} * u(10)$$

(3) $$u(30) = 1.2074 * u(10)$$

$$\Rightarrow u(30) = 1.2074 * 25.3 \text{ mph} = 30.5 \text{ mph}.$$

Using Equation 13), the CNS wind speeds at 30 meters above the ground are given on Table 2. The probability of the hourly average wind speed exceeding 45 mph at the 30-meter elevation is 1/13, or 0.0769.

ENERCON SERVICES, INC.

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JOB NO. NP-108 DATE 6/15/89

PROJECT 584

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E. Holcomb

REVIEWER 7/11/89 [illegible] APPROVED

CALCULATION NO. NPP1-SEB-005

3.0 EXTREMELY SEVERE WEATHER (ESW) GROUP EVALUATION

Tornado data in the vicinity of CNS were obtained from the National Severe Storm Forecast Center (NSSFC) in Kansas City. The NSSFC uses a computer program called 'TORPLOT' to evaluate tornado data. Given the latitude and longitude for the location of interest, TORPLOT identifies the tornado touchdown location, the storm intensity, the date and time of storm occurrence and the probability of recurrence, based on the available data, which for this case date back to 1950.

CNS is located outside Brownville, Nebraska at 40° 21' north latitude and 95° 38' west longitude.

Attachment 3 contains some information from NSSFC about TORPLOT. The program output listing for CNS is also provided. The evaluation locale is a 2 degree square centered at the above coordinates, i.e. a square of approximately 125 miles on a side.

The key parameter provided by TORPLOT is the probability of storm occurrence of a given windspeed. Extracted from Attachment 3, the summary data of interest are listed on sheet 13. Wind speed and probability values listed on the TORPLOT output apply uniformly across the evaluation quadrant, i.e. every point in the

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JOB NO. NP-108 DATE 6/12/89
PROJECT SBO
SUBJECT COOPER SITE SPECIFIC WEATHER DATA
CLIENT NPPD ORIGINATOR [illegible]
REVIEWER 7/11/89 [illegible] APPROVED
CALCULATION NO. NPP1-SBO-005

2-degree square is assumed to have the same wind speed at the time of storm occurrence, and wind speeds are instantaneous values, per conversations with NSSFC personnel.

Consistent with Appendix A of Reference 3, the evaluation criterion for extremely severe weather is the probability of tornadoes of intensity F2 or greater, i.e. those storms with winds in excess of 113 mph. (See page 3 of Att. 3 for the storm intensity scale):

Using sheet 10, a tornado of intensity F2 or greater would be expected to occur every 4243 years in the local vicinity of CNS, for an occurrence probability of 2.357×10^{-4} yr^{-1}. Hence, using site specific data, h_2 in Eqn (7) above is equal to 2.357×10^{-4} for Cooper. From Table 3-1* of Reference 1, it follows that CNS falls in ESW GROUP 1.

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* Use of the 113 mph criterion is conservative with respect to Table 3-1, because the probability of a storm with windspeed ≥ 125 mph would be less than the F2 storm intensity probability used above.

Tornadoes within 125. NM of BROWNSVILLE, NE

Following for global area within 125. NM radius of 40.35 95.63

The average F-scale is 1.20 which corresponds to 81. mph.
The average PL-scale is 1.178855; the average PL type path length is 3.293; True average length is 5.172
The average PW-scale is 1.341666; the average PW type path width is .034; True average width is .078
The average area using average PL & PW computed by 10.**(.5*(pl*pw)-3.) is .018
The summation of the individual areas computed from PL & PW 245.06 divided by 1031 yields average area of .238
The average area scale is 3.673846; The average area scale type area is .043
The average length times the average width is .405
True average length = 5.17
True average width = .078
True average area = .835

Probability =	.26528E-03	Mean Return Interval is	3770.94		
For winds exceeding 40 mph	prob = .26528E-03	Mean Return Interval is	3770.94	based on	806 events
For winds exceeding 73 mph	prob = .25245E-03	Mean Return Interval is	3911.26	based on	608 events
For winds exceeding 113 mph	prob = .23545E-03	Mean Return Interval is	4247.78	based on	299 events
For winds exceeding 158 mph	prob = .15115E-03	Mean Return Interval is	6205.38	based on	88 events
For winds exceeding 207 mph	prob = .75955E-04	Mean Return Interval is	13541.75	based on	27 events
For winds exceeding 261 mph	prob = .15388E-04	Mean Return Interval is	65012.53	based on	3 events

	F-0	F-1	F-2	F-3	F-4	F-5
Average PL length	.47	.98	2.25	5.13	7.28	14.69
Average PW width	.01	.01	.03	.06	.10	.22
Average PL & PW area	.01	.08	.16	.94	1.27	3.16
Average based on #	246.00	371.00	262.00	76.00	29.00	3.00
Average path length	1.14	2.80	7.04	16.20	20.15	37.64
Average path width	.02	.04	.10	.20	.27	.42
Average true area	.04	.22	.89	3.76	5.71	13.02
Average based on #	198.00	309.00	211.00	59.00	26.00	3.00

The following is for local area (two degrees square centered on latitude 40.35 longitude 95.63)
True average length = 5.16
True average width = .087
True average area = .858

Probability =	.26305E-03	Mean Return Interval is	3802.37		
For winds exceeding 40 mph	prob = .26305E-03	Mean Return Interval is	3802.37	based on	173 events
For winds exceeding 73 mph	prob = .25923E-03	Mean Return Interval is	3858.15	based on	138 events
For winds exceeding 113 mph	prob = .23578E-03	Mean Return Interval is	4243.06	based on	68 events
For winds exceeding 158 mph	prob = .14648E-03	Mean Return Interval is	6829.07	based on	24 events
For winds exceeding 207 mph	prob = .34458E-04	Mean Return Interval is	29028.31	based on	7 events
For winds exceeding 261 mph	prob = .00000E+00	Mean Return Interval is	**********	based on	0 events

JOB NO. NP-108 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Klumb

REVIEWER [illegible] 7/11/89 APPROVED

CALCULATION NO. NPPD-SBO-005

4.0 EDG TARGET RELIABILITY

The results from sections 2 and 3 have indicated that CNS falls in SW GROUP 2 and ESW GROUP 1. Using Tables 3-5a and 3-8 from Reference 1, the required EDG reliability for Cooper follows.

a) Table 3-5a ⇒ COOPER is in P1 OFFSITE POWER DESIGN CHARACTERISTIC GROUP

b) From Appendix A, Item 2C of Reference 1, Cooper is in EAC Power Configuration Group C.

c) Table 3-8, (a) and (2) above, and a required SBO coping duration of 4 hrs. indicate that the CNS EDG TARGET RELIABILITY is 0.95.

ENERCON SERVICES, INC.

SHEET 15 OF 18

JOB NO. NP-108 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR [illegible]

REVIEWER 7/11/89 [illegible] APPROVED

CALCULATION NO. NPPD - SBO - 005

5.0 REFERENCES

1. NUMARC 87-00, "Guidelines and Technical Basis for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors".

2. Enercon Services, Inc. "Station Blackout Coping Assessment for the Cooper Nuclear Station", NPPD-PR-01, Rev. 0, March 30, 1989.

3. Baranowsky, P.W., "Evaluation of Station Blackout Accidents at Nuclear Power Plants", NUREG-1032, June 1988.

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ENERCON SERVICES, INC.

JOB NO. NP-108 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Holcomb

REVIEWER 7/11/90 High APPROVED

CALCULATION NO. NPP1-SBO-005

6.0 TABLES

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SHEET 17 OF 18

JOB NO. NP-108 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E. Holcombe

REVIEWER MJM 7/11/89 APPROVED

CALCULATION NO. NPPD - SBO - 005

0 3 6 6 5 0 3 4 5

TABLE 1

SUMMARY of MAXIMUM WIND SPEED DATA (a) for COOPER NUCLEAR STATION

ELEVATION	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975
10 METERS (b)	25.3 mph	29.1	29.1	27.5	33.0	36.0	31.0	28.0	[illegible].1	40.1	34.5	37.0	30.0 mph

NOTES: (a) See Attachment 1 for wind speed data. Wind speeds are hourly maximum values.

(b) 10-meter and 35-ft. data in Attachment 1 are both assumed to apply at 10 meters.

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ENERCON SERVICES, INC.

SHEET 18 OF 18

JOB NO. NP-108 DATE 6/12/89

PROJECT 5B8

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR [signature]

REVIEWER 7/11/89 [signature] APPROVED

CALCULATION NO. NPPD-5B8-005

TABLE 2

COOPER NUCLEAR STATION WIND SPEED AT 30-METER ELEVATION (BASED ON 10-METER DATA)[a]

ELEVATION	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975
30 METERS	30.5 mph	35.1	35.1	33.2	39.8	43.5	37.4	33.8	35.1	48.4	41.7	44.7	36.2 mph

The probability P of the hourly maximum wind speed exceeding 45 mph at the 30-m. elevation is

$$P = 1/13 = 0.0769$$

NOTES: (a) See Attachment 1 for 10-m. wind speed data. See Section 2.1 for technique to determine wind speeds at 30 meters.

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SHEET 1-1 OF 16

JOB NO. NP-108 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Tillman

REVIEWER [illegible] 7/11/89 APPROVED

CALCULATION NO. NPPD-SBO-005

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ATTACHMENT 1

COOPER NUCLEAR STATION SITE SPECIFIC

WIND SPEED DATA

Note: Weather data have been supplied by Mr. William Swantz of NPPD

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Table 3-1 Summary of Meteorological Data Measured at the Cooper Nuclear Station for January 1, 1987 through December 31, 1987

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
100-m Wind													
Mean Speed (mph)	13.6	13.5	14.1	13.9	13.1	10.1	12.8	10.9	12.0	13.3	14.5	14.5	13.0
Maximum Speed (mph)	30.7	37.3	33.1	31.8	39.7	35.0	33.0	29.7	29.5	30.2	27.6	31.4	39.7
Direction of Maximum Speed	NW	NNW	E	S	S	N	SSE	W	NE	NNW	S	S	S
Date of Maximum Speed	29	28	17	19	27	12	25	6	9	1	21	30	27May
60-m Wind													
Mean Speed (mph)	11.8	11.2	12.2	11.9	11.5	8.8	10.9	9.2	9.8	11.2	12.3	12.6	11.1
Maximum Speed (mph)	28.5	34.4	28.2	29.9	35.2	31.0	24.5	27.5	26.2	27.8	30.0	30.3	35.2
Direction of Maximum Speed	NW	NNW	ESE	S	S	N	S	SSE	NE	NNW	SW	S	S
Date of Maximum Speed	29	28	17	19	27	12	18	18	9	1	12	30	27May
10-m Wind													
Mean Speed (mph)	8.5	7.4	8.9	8.4	8.1	6.2	7.6	6.2	6.2	7.4	8.5	8.9	7.7
Maximum Speed (mph)	24.0	25.3	22.9	24.0	23.3	19.4	18.6	18.6	19.5	22.5	17.9	22.6	25.3
Direction of Maximum Speed	NW	NNW	NW	NNW	S	N	SSE	SSW	NE	NW	S	S	NNW
Date of Maximum Speed	29	28	1	1	27	12	17	18	9	5	21	30	28Feb
10-m Ambient Temperature													
Mean (Degree C)	-1.3	3.5	7.0	13.6	20.4	24.0	26.0	22.4	18.3	10.0	5.0	1.0	12.7
Maximum (Degree C)	14.5	17.7	23.3	32.2	31.6	34.8	36.8	37.9	31.4	29.5	19.0	11.8	37.9
Date of Maximum	13	13	6	26	19	14	31	1	4	1	12	10	1Aug
Minimum (Degree C)	-16.6	-8.3	-8.7	-3.7	8.5	11.9	13.6	11.4	8.3	-4.0	-2.0	-11.7	-16.6
Date of Minimum	23	18	30	3	22	4	14	31	30	11	30	31	23Jan
10-m Dew Point Temperature													
Mean (Degree C)	-7.4	-3.8	-.2	2.4	10.9	15.3	17.9	15.7	10.9	1.8	0.3	-3.0	7.6
Maximum (Degree C)	3.3	4.5	11.3	14.8	19.7	22.5	23.9	23.8	18.7	15.3	12.1	9.6	23.9
Date of Maximum	12	14	22	19	26	15	6	15	15	31	15	8	6July

Table 3-1. Summary of Meteorological Data Measured at the Cooper Nuclear Station for January 1, 1986 through December 31, 1986

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
100-m Wind													
Mean Speed (mph)	15.5	12.3	15.8	16.7	12.7	11.6	12.1	11.1	12.2	12.2	13.5	11.1	13.1
Maximum Speed (mph)	37.1	35.6	34.2	38.0	34.9	28.2	27.3	27.3	32.9	26.8	36.7	28.9	38.0
Direction of Maximum Speed	NW	WNW	NNW	WNW	S	NNE	S	S,SSE	SW	N	N	WNW	WNW
Date of Maximum Speed	4	25	5	14	4	29	5	12	28	31	25	29	14Apr
60-m Wind													
Mean Speed (mph)	13.5	11.0	14.4	14.8	10.9	10.0	10.4	9.1	10.5	10.3	11.9	9.5	11.4
Maximum Speed (mph)	35.1	31.8	35.8	34.9	34.2	23.0	26.8	24.6	27.7	24.4	33.1	22.8	35.8
Direction of Maximum Speed	NW	NNW	S	W	S	NNE	S	SSE	WSW	N	N	NNW	S
Date of Maximum Speed	4	20	24	14	4	29	5	12	28	31	25	17	24Mar
10-m Wind													
Mean Speed (mph)	9.5	7.7	10.1	10.5	7.6	6.9	7.0	5.9	7.1	6.8	8.1	6.6	7.8
Maximum Speed (mph)	29.1	25.3	26.8	29.1	27.3	17.2	20.1	17.9	19.7	18.3	25.1	18.3	29.1
Direction of Maximum Speed	NW	NNW	NNW,S	W	S	SSW	S	SSE	S	NNW	W	NNW	W
Date of Maximum Speed	4	20	5,24	14	4	26	5	18	28	11	7	29	14Apr
10-m Ambient Temperature													
Mean (Degree C)	0.5	-2.7	8.3	13.0	18.1	24.5	25.8	21.1	20.1	12.8	2.3	-0.2	12.0
Maximum (Degree C)	16.3	16.2	31.4	29.5	29.1	34.6	35.0	31.4	30.8	25.1	17.7	9.3	35.0
Date of Maximum	20	26	29	24	31	28	24	25	26	7	21	14	24July
Minimum (Degree C)	-18.9	-22.0	-10.8	-2.0	7.2	13.4	14.8	7.9	7.1	1.0	-16.4	-12.1	-22.0
Date of Minimum	27	12	7	14	19	12	21	28	8	14	11	10	12Feb
10-m Dew Point Temperature													
Mean (Degree C)	-7.3	-6.2	0.4	4.8	8.9	15.2	18.5	14.8	14.0	7.3	-3.7	-3.9	5.2
Maximum (Degree C)	2.7	8.5	13.1	17.2	17.5	23.1	23.4	21.6	21.0	18.0	11.1	4.1	23.4
Date of Maximum	31	2	31	29	9	29	30	17	24	2	7	7	30July
Minimum (Degree C)	-26.2	-23.8	-17.8	-9.0	-2.9	7.5	11.7	2.0	2.4	-5.3	-20.0	-17.8	-26.2
Date of Minimum	26	12	7	14	1	2	20	28	7	13	13	10	26Jan

Table 3-1. Summary of Meteorological Data Measured at the Cooper Nuclear Station for January 1, 1985 through December 31, 1985

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
100-m Wind													
Mean Speed (mph)	15.1	12.6	13.8	14.4	13.8	13.9	11.0	11.6	14.8	12.8	12.5	15.1	13.5
Maximum Speed (mph)	36.0	27.5	36.0	40.5	36.5	37.1	25.1	34.7	29.5	35.8	34.2	33.8	40.
Direction of Maximum Speed	NNW	NNW	W	S	WSW	SSE	WNW	N	NW	S	NNW	NW	S
Date of Maximum Speed	25	23	4	19	11	23	11	5	23	7	6	17	19Apr
60-m Wind													
Mean Speed (mph)	13.8	11.3	13.0	13.6	11.9	12.0	9.1	9.6	12.7	10.9	11.4	13.3	11.9
Maximum Speed (mph)	34.4	25.9	36.9	36.7	32.4	31.3	22.1	31.3	28.9	33.6	32.7	31.1	36.9
Direction of Maximum Speed	NNW	NNW	S	S,SSE	WSW	SSE	NNW(2)	N	S	S	NNW	NW	S
Date of Maximum Speed	25	23	26	19	11	23	4	5	19	7	6	17	26Mar
10-m Wind													
Mean Speed (mph)	10.4	8.0	9.1	10.0	8.5	8.4	6.9	6.4	8.4	6.9	7.5	9.6	8.2
Maximum Speed (mph)	28.2	21.0	29.1	28.0	26.6	21.0	17.7	19.7	22.1	26.6	25.5	25.5	29.1
Direction of Maximum Speed	NNW	NNW	S	SSW(2)	WSW	SE	NNW	N	NW	NW(2)	NNW	NW	S
Date of Maximum Speed	25	16	26	18	11	23	4	5	23	4	6	17	26Mar
10-m Ambient Temperature													
Mean (Degree C)	-6.5	-3.6	7.9	13.5	19.0	21.0	24.8	21.4	17.7	12.7	0.7	-6.0	10.3
Maximum (Degree C)	9.9	13.4	22.7	30.0	30.2	35.2	35.5	34.1	33.1	24.5	20.4	7.5	35.5
Date of Maximum	6	28	26	18	25	8	9	31	2	16	18	30	9July
Minimum (Degree C)	-25.4	-23.0	-3.1	-3.5	7.9	8.5	14.5	11.4	2.8	-0.5	-13.6	-21.6	-25.4
Date of Minimum	19	6	4	1	18	13	3	26	30	1	30	18	19Jan
10-m Dew Point Temperature													
Mean (Degree C)	-11.8	-9.1	-1.1	5.3	10.3	12.3	16.9	17.7	12.8	5.9	-4.1	-10.6	3.8
Maximum (Degree C)	-1.0	9.7	12.0	16.6	21.	23.6	22.9	25.5	23.7	17.3	15.3	1.7	25.5
Date of Maximum	18	21	3	29	30	24	12	9	1	18	18	30	9Aug
Minimum (Degree C)	-29.8	-27.4	-11.9	-10.1	-2.0	-2.2	7.5	10.3	-2.0	-5.9	-16.7	-25.6	-29.8
Date of Minimum	31	1	4	8	2	17	4	10	30	28	27	14	31Jan

Table 3-1. Summary of Meteorological Data Measured at the Cooper Nuclear Station, January 1984 through December 1984

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
100-m Wind													
Mean Speed (mph)	13.6	15.9	14.6	18.3	13.0	13.0	11.4	10.9	13.0	12.6	14.9	14.3	13.8
Maximum Speed (mph)	51.0	46.0	38.0	40.0	37.0	43.0	25.7	26.0	30.4	32.0	34.5	30.4	51.0
Direction of Maximum Speed	NNW	NNW	NW	NW,NNW	NW	S	S	S	S	W	NNW	N	NNW
Date of Maximum Speed	29	5	7	29	25	7	8	31	7	18	10	24	29Jan
60-m Wind[a]													
Mean Speed (mph)	-m-	-m-	-m-	-m-	11.5	12.3	9.9	9.0	11.3	10.6	13.1	12.8	11.3
Maximum Speed (mph)	-m-	-m-	-m-	-m-	37.0	40.0	22.9	22.8	30.6	29.5	31.8	29.3	40.0
Direction of Maximum Speed	-m-	-m-	-m-	-m-	NNW	S	S	SSE	S,SSW	W	NNW	N	S
Date of Maximum Speed	N/A	N/A	N/A	N/A	25	7	9	31	7	18	10	24	7Jun
10-m Wind													
Mean Speed (mph)	6.5	-m-	-m-	-m-	8.5	8.4	6.8	5.8	7.6	7.0	9.0	9.0	7.6
Maximum Speed (mph)	18.0	-m-	-m-	-m-	27.0	27.5	16.0	16.8	23.7	23.5	25.7	22.4	27.5
Direction of Maximum Speed	-m-	-m-	-m-	-m-	N	S	S	SSE	S	W	NNW	SSW	S
Date of Maximum Speed	3	N/A	N/A	N/A	25	7	14	31	7	18	10	28	7Jun
10-m Ambient Temperature													
Mean (°C)	-4.6	2.0	0.2	9.1	15.9	23.2	24.8	25.1	18.1	12.7	6.0	-0.1	11.0
Maximum (°C)	10.3	18.3	12.2	26.4	28.5	31.6	36.7	38.2	35.6	25.4	20.8	20.7	38.2
Date of Maximum	29	22	25	26	18	26	8	28	6	3	14	28	28Aug
Minimum (°C)	-23.3	-16.7	-11.4	0.8	3.5	10.0	16.7	12.8	-3.0	-0.6	-4.7	-15.9	-23.3
Date of Minimum	20	5	8	6	8	3	29	23	29	23	28	6	20Jan
10-m Dew Point Temperature[a]													
Mean (°C)	-m-	-m-	-m-	-m-	8.1	15.6	16.0	15.9	9.5	6.5	-2.1	-6.5	7.7
Maximum (°C)	-m-	-m-	-m-	-m-	20.0	23.1	21.9	23.2	19.9	16.4	11.5	13.7	23.1
Date of Maximum	N/A	N/A	N/A	N/A	24	14	10	6	25	27	9	25	14Jun 6Aug
Minimum (°C)	-m-	-m-	-m-	-m-	-4.5	6.7	9.8	4.2	-5.8	-8.2	-14.1	-24.5	-24.5
Date of Minimum	N/A	N/A	N/A	N/A	9	2	3	30	29	23	15	6	6Dec

Table 3-1. Summary of Meteorological Data Measured at the Cooper Nuclear Station, January 1983 through December 1983

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
318-Ft Wind													
Mean Speed (mph)	13.2	12.5	15.5	15.8	13.9	11.8	13.1	10.4	14.8	13.0	14.1	14.9	13.6
Maximum Speed (mph)	39.0	29.0	33.0	44.0	36.0	33.0	30.0	25.0	36.0	30.0	41.0	33.0	44.0
Direction of Maximum Speed	NNW	NNW	SSE,SE	NNW	SE	S	SSW,SW	S	NNW	SW	NNW	NW	NNW
Date of Maximum Speed	11	2	4	2	1	12	3	20	20	27	9	24	22Apr
35-Ft Wind													
Mean Speed (mph)	9.0	7.5	9.7	10.5	10.0	7.9	7.8	5.9	8.6	7.5	9.1	10.1	8.7
Maximum Speed (mph)	30.0	24.0	24.0	31.0	28.0	27.0	22.0	16.0	23.0	21.0	27.0	29.0	31.0
Direction of Maximum Speed	NNW	NNW	NNW	N	SW	S	SW	-m-	NNW	-m-	-m-	-m-	N
Date of Maximum Speed	11	2	27	2	6	12	3	15	20	27	9	24	22Apr
35-Ft Ambient Temperature													
Mean (°F)	-m-	-m-	-m-	45.7	58.9	71.2	80.0	81.3	69.4	54.1	37.7	12.1	56.7
Maximum (°F)	-m-	-m-	-m-	78.5	96.0	89.5	100.5	104.0	94.5	88.0	68.0	35.0	104.0
Date of Maximum	N/A	N/A	N/A	26	27	30	22	17	9	2	2	8	17Aug
Minimum (°F)	-m-	-m-	-m-	28.5	39.0	44.5	62.3	61.5	33.5	34.5	10.4	-11.	-17.5
Date of Minimum	N/A	N/A	N/A	18	8	1	25	12	23	13	29	22	22Dec
Precipitation													
Total (in.)	0.18	0.68	1.03	1.06	1.34	2.87	0.19	0.64	3.10	0.75	3.54	0.14	15.52
Rain Days[a]	5	2	6	8	9	8	2	4	6	4	5	4	63
Maximum in a Single Day (in.)	0.07	0.67	0.40	0.31	0.29	0.76	0.17	0.48	1.82	0.57	1.20	0.10	1.82
Date	26	1	26	12	13,18	17	13	23	19	21	9	20	19Sep
Maximum in a Single Hour (in.)	0.02	0.13	0.17	0.21	0.12	0.37	0.10	0.29	1.09	0.11	0.55	0.05	1.09
Date	29	1	15	12	18	17	13	23	19	21	9	20	19Sep

[a]Rain days are defined as a day in which 0.01 in. of rain or rain equivalent of frozen precipitation has fallen.
Note: -m- indicates missing data; N/A indicates Not Available.

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TABLE 4-1 SUMMARY OF METEOROLOGICAL DATA MEASURED AT THE COOPER NUCLEAR STATION, BROWNVILLE, NEBRASKA, JANUARY 1982-DECEMBER 1982.

	JAN	FEB	MAR	APR	MAY	JUN
318-Ft Wind						
Mean Speed (mph)	14	11	13	15	12	9
Maximum Speed (mph)	39	27	38	45	35	35
Direction of Maximum Speed	WNW	N	SW	NW	S	S
Date of Maximum Speed	22	22	30	2	9	14
Prevailing Direction[a]			NW-N			SSE-SSW
35-Ft Wind						
Mean Speed (mph)	9	10	11	12	9	7
Maximum Speed (mph)	28	32	34	36	28	27
Direction of Maximum Speed	WNW	SSW,NNE,N-NNW	W	NW	SSW	WNW
Date of Maximum Speed	22	12,23,24	30	2	9,10	14
Prevailing Direction[a]			NNW-NNE			SSE-SSW
35-Ft Ambient Temperature						
Mean (C)	-9.8	-3.7	3.3	9.9	17.5	19.8
Departure from Normal (C°)[b]	-6.0	-3.0	-0.8	-2.2	-0.1	-2.8
Maximum (C)	5.9	21.2	18.7	26.8	28.4	33.0
Date of Maximum	27	22	12, 30	2	4	29
Minimum (C)	-28.1	-22.0	-14.5	-6.9	6.4	8.1
Date of Minimum	10	6	6	6	7	1
Precipitation						
Total (in.)	0.69	0.27	1.05	0.96	6.96	2.41
Departure from Normal (in.)[b]	-0.19	-0.78	-1.19	-2.05	2.29	-3.65
Rain Days[c]	7	6	10	5	18	6
Maximum in a Single Day (in.)	0.41	0.11	0.25	0.65	2.64	1.28
Date	22	17	19	28	20	8
Maximum in a Single Hour (in.)	0.19	0.03	0.14	0.11	0.88	0.84
Date	22	17	19	5, 28	20	8

[a] Prevailing direction is derived from the quarterly and annual joint frequency tables and is reported for the quarterly and annual periods only. The quarterly periods used are: Jan-Mar, Apr-Jun, Jul-Sep, and Oct-Dec.

[b] The climatological normals were derived from NOAA climatological data for Auburn, Nebraska.

[c] Rain days are defined as a day in which 0.01 in. of rain or rain equivalent of frozen precipitation has fallen.

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TABLE 4-1 (CONT.)

	JULY	AUG	SEP	OCT	NOV	DEC	Annual
318-Ft Wind							
Mean Speed (mph)	10	9	11	13	13	11	12
Maximum Speed (mph)	28	24	29	33	40	28	45
Direction of Maximum Speed	ENE	SSW	S	NW	NNW	NW	NW
Date of Maximum Speed	20	4	28	19	12	18	2 Apr
Prevailing Direction[a]			SSE-SSW			SSE-SSW	SSE-SSW
35-Ft Wind							
Mean Speed (mph)	7	6	6	5	7	7	8
Maximum Speed (mph)	22	19	19	16	33	24	36
Direction of Maximum Speed	SSW	SW	S	W	NNW	SW	NW
Date of Maximum Speed	5	4	28	11	12	13	2 Apr
Prevailing Direction[a]			SE-S			SSE-SSW	SSE-SSW
35-Ft Ambient Temperature							
Mean (C)	25.4	22.3	18.1	12.3	3.3	0.0	9.9
Departure from Normal (C°)[b]	0.3	-2.0	-1.2	-1.5	-2.0	1.1	-1.7
Maximum (C)	36.3	35.5	29.7	29.5	18.8	16.3	36.3
Date of Maximum	3	3	1	5	9	1	3 Jul
Minimum (C)	14.8	12.2	2.8	-3.3	-11.1	-11.6	-28.1
Date of Minimum	31	11	21	21	24	29	10 Jan
Precipitation							
Total (in.)	1.71	3.47	0.93	0.88	0.79	3.32	27.44
Departure from Normal (in.)[b]	-2.40	2.54	-3.14	-1.64	-0.37	2.27	-7.86
Rain Days[c]	8	15	4	6	4	8	97
Maximum in a Single Day (in.)	0.66	2.60	0.50	0.38	0.47	1.31	2.64
Date	6	12	6	28	11	27	20 May
Maximum in a Single Hour (in.)	0.45	1.19	0.25	0.16	0.13	0.51	1.19
Date	6	12	6	8	11	1	12 Aug

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TABLE 4-1 SUMMARY OF METEOROLOGICAL DATA MEASURED AT THE COOPER NUCLEAR STATION, BROWNVILLE, NEBRASKA, JANUARY 1981-DECEMBER 1981

	JAN	FEB	MAR	APR	MAY	JUN
318-Ft Wind						
Mean Speed (mph)	11	17	14	16	14	13
Maximum Speed (mph)	28	39	33	38	31	37
Direction of Maximum Speed	NNW	N	SSW	SSW	S	SSW
Date of Maximum Speed	6	10	28,29	3	22	13
Prevailing Direction (a)			NW-N			SSE-SSW
35-Ft Wind						
Mean Speed (mph)	8	11	9	11	9	9
Maximum Speed (mph)	22	30	30	31	23	30
Direction of Maximum Speed	NNW	N	WSW	SSW	SSW,SSE,S	SSW
Date of Maximum Speed	6	10	31	3	3,16,21	13
Prevailing Direction (a)			NW-N			SSE-SSW
35-Ft Ambient Temperature						
Mean (C)	-1.9	-0.5	6.3	15.1	15.6	22.6
Departure from Normal (C) (b)	1.9	0.2	2.2	3.0	-2.0	0.0
Maximum (C)	18.4	19.0	23.1	30.6	27.9	33.4
Date of Maximum	24	25	30	26	29	8
Minimum (C)	-15.8	-25.9	-7.5	1.6	-1.4	11.9
Date of Minimum	17	11	8	6	11	1
Precipitation						
Total (in.)	0.22	0.00	0.94	1.68	2.37	1.75
Departure from Normal (in.) (b) (c)	-0.66	-1.05	-1.30	-1.33	-2.30	-4.31
Rain Days	1	0	7	7	8	12
Maximum in a Single Day (in.)	0.22		0.63	0.46	0.93	0.59
Date	31		4	12	18	15
Maximum in a Single Hour (in.)	0.11		0.21	0.46	0.17	0.23
Date	31		4	12	17,18	25

(a) Prevailing direction is derived from the quarterly joint frequency tables and is reported for the quarterly period only. The quarterly periods used are: Jan-Mar, Apr-Jun, Jul-Sep, and Oct-Dec.
(b) The climatological normals were derived from NOAA climatological data for Auburn, Nebraska.
(c) Rain days are defined as a day in which 0.01 in. of rain or rain equivalent of frozen precipitation has fallen.

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TABLE 4-1 (CONT.)

	JULY	AUG	SEP	OCT	NOV	DEC	Annual
318-Ft Wind							
Mean Speed (mph)	10	9	10	15	14	12	13
Maximum Speed (mph)	28	24	28	37	36	37	39
Direction of Maximum Speed	SSE	NNW	NNW	NW	N	NW	N
Date of Maximum Speed	24	7	26	17	19	3	10 Feb
Prevailing Direction (a)			SSE-SSW			SSE-SSW	SSE-SSW
35-Ft Wind							
Mean Speed (mph)	7	6	7	9	9	8	9
Maximum Speed (mph)	21	17	20	26	25	28	31
Direction of Maximum Speed	WSW	NNW,SSW, SW	NW,NNW	WNW	WNW,NNW	NW	SSW
Date of Maximum Speed	17	7,14	26	17	18,19	3	3 Apr
Prevailing Direction (a)			SSE-SSW			SE-S	SE-S
35-Ft Ambient Temperature							
Mean (C)	23.7	21.6	18.5	10.9	5.9	-3.4	10.6
Departure from Normal (C) (b)	-1.4	-2.7	-0.8	-7.9	0.6	-2.3	-1.0
Maximum (C)	35.2	31.7	31.9	25.3	18.4	13.7	35.2
Date of Maximum	14	30	29	5	17	7	14 Jul
Minimum (C)	12.2	12.1	2.0	-4.5	-7.5	-28.6	-28.6
Date of Minimum	28	11	10	23	21	19	19 Dec
Precipitation							
Total (in.)	4.77	4.87	3.15	1.84	1.58	0.43	23.60
Departure from Normal (in.) (b)	0.66	0.39	-0.92	-0.68	0.42	-0.62	-11.70
Rain Days (c)	10	11	3	6	2	2	69
Maximum in a Single Day (in.)	0.88	1.67	1.17	1.13	1.44	0.27	1.67
Date	26	5	7	3	1	16	5 Aug
Maximum in a Single Hour (in.)	0.45	0.73	0.75	0.41	0.35	0.05	0.75
Date	23	5	7	3	1	16,27	7 Sep

Table 3-1. Summary of meteorological data measured at the Cooper Nuclear Station, Brownville, Nebraska, January-December 1980.

	318-ft Wind			35-ft Wind			35-ft Temperature					
Month	Mean Speed (mph)	Max Speed (mph)	Prevailing Direction	Mean Speed (mph)	Max Speed (mph)	Prevailing Direction	Mean (C)	Mean Max (C)	Mean Min (C)	Abs Max (C)	Abs Min (C)	Precipitation Total (in.)
January	13.1	38		7.2	24		-3.0	1.4	-7.3	13.5	-23.8	0.66
February	11.7	38	NNW-N[a]	6.5	25	NNW-N[a]	-4.5	-0.2	-9.0	10.6	-22.3	0.17
March	15.2	31		8.2	28		2.0	6.7	-2.7	19.0	-19.9	1.92
April	13.6	34		7.6	23		11.4	16.7	5.8	30.4	-1.6	1.80
May	12.0	31	ESE-SSE[a]	5.7	18	NNW-N[a,b]	17.2	22.8	11.4	30.4	3.3	1.49
June	13.2	33		5.7	15		23.5	29.5	17.5	39.7	12.1	0.86
July	12.7	30		4.6	17		26.9	33.0	21.2	39.8	14.7	0.82
August	13.1	29	SE-S[a]	5.1	15	SSE-S[a]	24.8	30.6	19.7	36.3	14.1	2.70
September	13.2	41		5.5	26		19.6	25.8	13.2	34.1	1.7	0.41
October	13.3	36		6.2	26		9.2	15.5	3.4	24.4	-5.0	1.39
November	12.7	30	NNW-N[a]	8.5	24	NNW-N,SSE-S[a]	6.2	12.0	0.7	26.5	-10.3	0.29
December	12.4	30		9.0	25		-1.4	3.0	-5.6	16.5	-21.0	1.68
Annual	13.0	41	NNW-N,SSE-S	6.7	28	NNW-N,SSE-S	11.3	16.4	5.7	39.8	-23.8	14.22

[a] Prevailing direction is given for each quarter of the year; January-March, April-June, July-September, October-December.
[b] Only 61% of the wind data at 35-ft level was recovered during this quarter.

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Table 3-1. Summary of meteorological data measured at the Cooper Nuclear Station, January-December 1979.

	Meteorological Data												
	35 ft temperature					35 ft			318 ft				
Month	Mean (F)	Mean Min (F)	Mean Max (F)	ABS Min (F)	ABS Max (F)	Direction Pre-vailing	Mean Speed (mph)	Max Speed (mph)	Direction Pre-vailing	Mean Speed (mph)	Max Speed (mph)	Precip. Total. (in)
January	12.6	5.0	19.5	-8.9	40.0	NNW	6.3	21.5	NNW	13.1	35.0	0.70
February	17.0	8.0	25.0	-16.0	42.4	N	6.0	25.0	NNW	12.6	34.0	0.02
March	38.8	31.0	47.5	16.2	73.3	NNW	7.4	29.1	NNW	18.1	41.5	3.22
April	50.5	41.0	59.8	23.5	75.9	ESE	4.0	10.8	ESE,SE	14.3	32.3	1.61
May	62.4	52.0	72.6	38.5	85.9	S	3.8	15.4	S	15.6	43.2	1.40
June	72.1	62.0	82.1	45.2	94.0	S	3.2	13.4	S	12.5	38.6	2.06
July	74.5	67.0	85.0	55.0	94.4	SE	2.7	10.8	SSE	11.0	29.7	4.40
August	74.0	65.0	83.4	38.2	[illegible]1.1	ENE	2.6	5.8	S	15.1	28.0	3.20
September	67.8	56.0	79.9	40.1	88.3	a	a	a	S	13.4	32.7	1.20
October	55.9	44.0	67.8	30.6	85.4	NNW	5.9	27.0	NNW	14.1	32.8	3.99
November	39.0	31.0	47.9	20.2	68.8	S,WNW	8.0	19.9	NW	13.5	26.9	1.55
December	33.1	24.0	42.9	-0.1	61.6	NNW	8.1	24.7	NNW	14.4	34.0	0.19
Annual	50.0	40.7	59.6	-16.0	94.4	NNW	5.7	29.1	NNW,S	14.0	43.2	23.54

a = No Data Available

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Table 3-1. Summary of meteorological data measured at Cooper Nuclear Station, January - December 1978.

Month	Meteorological Data											
	35 ft Temperature					35 ft			318 ft			
	Mean (F)	Mean Min. (F)	Mean Max. (F)	Abs. Min. (F)	Abs. Max. (F)	Direction Prevailing	Mean Speed (mph)	Max. Speed (mph)	Direction Prevailing	Mean Speed (mph)	Max. Speed (mph)	Precip. Total (in)
January	14.1	6.3	21.8	-9.8	44.4	NNW	4.2	27.5	NNW	13.3	37.9	0.08
February	17.2	9.8	23.6	-15.8	42.5	NW	8.7	33.2	N	11.5	37.7	0.47
March	35.2	26.5	43.5	-11.3	80.4	N	8.3	25.5	NNW	12.7	33.9	0.11
April	53.0	45.1	60.9	30.5	78.8	ESE	11.6	25.8	S	16.6	36.8	3.04
May	61.1	53.4	69.1	38.1	86.1	E	8.6	31.2	SE	13.3	39.6	3.60
June	73.1	63.7	82.4	50.4	98.6	SSE	9.0	40.1	S	13.6	52.4	2.86
July	76.6	67.9	85.2	60.8	96.8	S	6.7	21.7	S	13.0	30.5	5.11
August	75.4	65.4	86.1	51.8	95.4	SSE	6.6	21.2	SSE	11.1	36.6	1.12
September	71.0	61.3	81.4	47.1	95.4	S	6.4	19.9	S	12.3	28.4	6.44
October	54.1	42.9	67.0	32.7	86.1	N,S	6.8	18.2	NNW,S	12.0	29.1	0.62
November	40.9	33.8	49.2	14.0	77.5	N,S	6.2	17.7	N,SSW	9.8	23.7	1.36
December	27.2	20.2	35.3	4.9	47.8	NW	7.9	28.0	N	12.5	30.6	0.23

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NPPD-SBO-005
EA

Table 3.3-19. Monthly wind speed statistics, Cooper Nuclear Station, January - December 1977.

	Wind Speed (mph)			
	35 ft Wind Speed		318 ft Wind Speed	
Month	Mean	Hourly Maximum	Mean	Hourly Maximum
January	9.5	26.0	12.9	40.0
February	10.3	28.0	14.2	42.0
March	12.4	32.0	16.8	37.0
April	10.1	34.0	14.5	47.0
May	9.9	25.0	14.2	36.0
June	8.9	25.0	13.5	36.0
July	9.3	24.0	14.8	41.7
August	8.2	28.4	11.9	29.6
September	7.2	19.0	13.5	38.4
October	8.4	21.4	15.1	39.1
November	11.2	34.5	15.3	45.1
December	11.4	26.6	15.9	34.9
Annual	9.7	34.5	14.4	47.0

1-15/16
NPPI-580-005
EH

Table 3.3-19 Monthly wind speed statistics, Cooper Nuclear Station, January-December 1976.

	Wind Speed (mph)			
	35 ft Wind Speed		318 ft Wind Speed	
Month	Mean	Hourly Maximum	Mean	Hourly Maximum
January	11	28	15	34
February	11	29	16	45
March	11	35	15	44
April	11	37	16	44
May	9	28	13	34
June	10	34	14	42
July	8	19	11	26
August	8	22	12	28
September	8	20	11	28
October	8	23	10	28
November	10	28	12	36
December	10	28	13	35
Annual	10	~~28~~ 37 EH	11	35

1-16/16
NPPP - 580-005
EH

Table 3.3-19. Monthly wind speed statistics, Cooper Nuclear Station, January-December 1975.

	Wind Speed (mph)			
	35 ft Wind Speed		318 ft Wind Speed	
Month	Mean	Hourly Maximum	Mean	Hourly Maximum
Jan.	7	18	15	37
Feb.	7	16	14	32
Mar.	3	29	16	45
Apr.	12	28	18	39
May	10	27	16	35
June	7	18	13	45
July	7	23	11	29
Aug.	9	23	15	34
Sep.	8	20	11	25
Oct.	9	27	13	32
Nov.	11	30	14	38
Dec.	9	27	13	36
Annual	8	30	14	45

ENERCON SERVICES, INC.

SHEET 2-1 OF 4

JOB NO. NP-109 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E [illegible]

REVIEWER [illegible] 7/11/89 APPROVED

CALCULATION NO. NPPD-SBO-005

ATTACHMENT 2

VARIATION OF WIND SPEED WITH ELEVATION

NOTE: The information in Attachment 2 has been extracted from the following document:

Simiu, Emil, Changery, Michael J. and James J. Filliben "Extreme Wind Speeds at 129 Stations in the Contiguous U.S.", NBS Bldg. Science Series #118, March 1979.

8903550354

Nashville, TN	(1963 & 1972)
Abilene, TX	(1971)
Amarillo, TX	(1972)
Brownsville, TX	(1963)
Corpus Christi, TX	(1955, 1961 & 1970)
Port Arthur, TX	(1972)
Salt Lake City, UT	(1968)
Burlington, VT	(1968)
Lynchburg, VA	(1962 & 1967)

2.3 ROUGHNESS CONDITIONS AT AIRPORT STATIONS

In an attempt to ensure that the terrain roughness conditions are uniform among all the sets of data being analyzed, only airport stations have been considered herein. In principle, it may be assumed that at such stations open exposure conditions prevail. Nevertheless the mere fact that wind speed measurements are taken at an airport station does not necessarily ensure that the wind climatological conditions reflected by these measurements are identical, from the standpoint of the terrain exposure, to those prevailing at a different airport. For example, it is noted in Reference 2 that the estimated 50-year wind at Chicago Midway Airport is about 15 mph less than at the Chicago O'Hare airport. The probable reason for this difference is that the terrain around the Chicago Midway Airport is relatively heavily built-up. Similar considerations might explain to some extent the difference between the estimated 50-year winds at the Washington National Airport and the Baltimore-Washington International Airport, which are estimated in this report to be 66 mph and 75 mph respectively. Thus, in interpreting airport data for the purpose of developing wind maps, it is appropriate to take into account the possibility that, at the airport of concern, the terrain exposure conditions might differ somewhat from those defined as "open" (e.g., in Reference 3).

2.4 VARIATION OF WIND SPEED WITH HEIGHT ABOVE GROUND

To ensure the micrometeorological homogeneity of the data at any given station it is necessary to reduce all the wind speeds recorded at that station to a common elevation. The elevation chosen for this purpose is 10m above ground.

The mean wind profile near the ground in homogeneous terrain is given by the well-known logarithmic law, which may be written in the form:

$$U(z) = \frac{\ln \frac{z}{z_o}}{\ln \frac{10}{z_o}} U(10) \qquad (2.4.1)$$

where z = height above ground and z_o = roughness length, both expressed in meters. In open terrain, z_o may vary from, say, 0.03m to 0.10m. In this report the reduction of the data to an elevation of 10m is based on the assumption $z_o = 0.05$m. It can be verified that the errors inherent in the assumption $z_o = 0.05$m -- when in fact the values $z_o = 0.03$m or $z_o = 0.10$m were correct -- are small (of the order of 1% or 2%).

An approximation to Eq. 2.4.1 is given by the power law

$$U(z) = \left(\frac{z}{10}\right)^{\alpha} U(10) \tag{2.4.2}$$

where, for open terrain conditions, it is generally assumed $\alpha = 1/7$ (3). It is noted that Eq. 2.4.1, and therefore its approximate equivalent given by Eq. 2.4.2, is valid for mean wind speeds averaged over a relatively long time interval, e.g., one hour. The question thus arises of expressing the variation with height of the fastest-mile wind speed, which is averaged over a relatively short time (30 to 90s or so).

To obtain an approximate expression for the fastest-mile wind profile, note that it may be assumed, approximately,

$$\frac{U_{pk} - U_{fm}}{U_{pk} - U} = \frac{1}{2} \tag{2.4.3}$$

where U_{pk} = peak wind speed, U_{fm} = fastest-mile speed, and U = hourly mean speed (see, e.g., Reference 4, p. 62). The expression for U_{pk} can, in open terrain, be written as

$$U_{pk}(z) = U(z) + 3\,\overline{u'^2}^{1/2} \tag{2.4.4}$$

where $\overline{u'^2}^{1/2}$ = r.m.s of longitudinal velocity fluctuations, and

$$\overline{u'^2}^{1/2} = \frac{U(10)}{\ln \frac{10}{z_o}} \tag{2.4.5}$$

where z_o is expressed in meters (see Reference 4, pp. 45 and 54).

It can be verified by using Equations 2.4.1, 2.4.3, 2.4.4 and 2.4.5 that, within the anenometer elevation range of interest in this report, it is possible to write approximately

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$$\frac{U_{fm}(10)}{U_{fm}(z)} = \frac{U(10)}{U(z)} \left(1 + \frac{z-10}{10}\, 0.02\right) \qquad (2.4.6)$$

where z is expressed in meters. The errors inherent in Equation 2.4.6 are of the order of -1 to 3%, the higher errors being on the conservative side (i.e., yielding slightly higher fastest-mile values at 10m above ground than would be obtained by a more "exact" expression). Eq. 2.4.6 has been employed to obtain the corrected speeds at 10m above ground in this report.

ENERCON SERVICES, INC.

SHEET 3-1 OF 36

JOB NO. NP-108 DATE 6/12/89

PROJECT SBΦ

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Schwartz

REVIEWER MM 7/11/89 APPROVED

CALCULATION NO. NPPD-SBΦ-005

ATTACHMENT 3

NSSFC PROGRAM 'TORPLOT' OUTPUT FOR CNS

3-2/36
NPP1-SBO-005
EA

NATIONAL SEVERE STORMS FORECAST CENTER
TORNADO DATA

The enclosed tornado listing provides information on all reported tornadoes in the area indicated since 1950. The various entries, and tables are explained below. If you have additional questions, please write or call the National Severe Storms Forecast Center, Room 1728, 601 E. 12th St., Kansas City, MO. 64106, phone (816) 426-3367.

The item-by-item listing shows the year, month, date and time of occurrence of each tornado in Central Standard Time.

The columns labeled SEQ and SEG indicate the sequence number and segment number of each tornado. Sequence numbers are assigned chronologically within each state. The first tornado in 1973 in Ohio is given sequence number 1 for the state of Ohio that year. Many tornadoes have lengthy paths that cross county or state lines. Some change direction quickly. In such cases the tracks are broken into segments that are denoted by segment numbers. A tornado with 3 segments has the same sequence number, but a different segment number, for each separate segment. The statistics in the tables are based only on the initial touchdown points.

The Latitude and Longitude of the beginning and ending points of each tornado are shown followed by the overall length and width. Deaths and injuries for each segment are listed, followed by Damage Class. Damage Class numbers range from 1 to 9 and provide an estimate of the damage according to the table (#1) below.

The columns labeled FPP provide the Fujita-Pearson scale estimates of Force, Path Length and Path Width. All three scales are logarithmic with values ranging from "-" for the smallest category to +5 for the largest.

The following table (#2) shows the range in each scale. The Path Length and the Path Width values represent estimates as to the actual amount of ground contact for each tornado. For instance, if a tornado had an overall length of 45 miles but made actual ground contact only 60 percent of the time the Path Length scale value would be a 3.

The AZRAN column indicates the azimuth and range from the center point. 129/83 indicates the tornado touchdown was 129 degrees (southeast) at 83 nautical miles from the center point.

A circular plot of tornado touchdown points is enclosed. The city of interest is at the center of the plot, north is at the top, east at the right, etc. Each digit represents the number of touchdowns in a small square area, about 2 miles on a side. Thus, what might be plotted as 21 actually represents 2 touchdowns in one square and 1 touchdown in the adjacent square.

The four frequency tables provide detailed information about the time of day, time of year and length and width characteristics of tornadoes in the area of interest.

The Path Width vs Path Length table is computed from the P1 and Pw data. Also, the mean path length and mean path areas are computed from the P1 and Pw data. When the length and width scale values are converted back to length and width figures the minimum values in each range are used. For example, a P1 value of 3 is converted to a length of 10 miles in the calculation.

The monthly and hourly distribution tables indicate the favored times of day and year for tornadoes in each area. Monthly and hourly percentages are shown on the hourly distribution table. Mean times are shown for each month and for the entire year. These times should be interpreted and used in conjunction with the hourly percentages in examining the diurnal trend of tornadoes. All times in these tables are Central Standard Time.

The latitude and longitude of the center point used by the search program is listed at the upper right of the Hourly Distribution Table. These figures are in degrees and hundredths. The map scale used in the circular plot is compatible with the WSR 57 radar map, 125 nautical mile range.

Table #1 (Damage Class)

1	Less than $50
2	$50 to $500
3	$500 to $5,000
4	$5,000 to $50,000
5	$50,000 to $500,000
6	$500,000 to $5 million
7	$5 Million to $50 Million
8	$50 Million to $500 Million

Table #2 (FPP Scale)

Scale -	F (mph) Less than 40	Damage (little or no damage)	P1 (miles) Less than .3	Pw (width) Less than 6
0	40-72	Light	0.3-10	6-17 yds
1	73-112	Moderate	1.0-3.1	18-55 yds
2	113-157	Considerable	3.2-9.9	56-175 yds
3	158-206	Severe	10-31	176-556 yds
4	207-260	Devastating	32-99	0.3-0.9 mi
5	261-318	Incredible	100-315	1.0-3.1 mi

0 8 6 6 5 9 3 7 1

GRENIER

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SEQ=34?07 QPRI=177 CPL=132 LPP=66 COPIES=1 PAGES=215
/DELETE

CREATED: 20-MAR-89 20:09:30
ENQUEUED: 20-MAR-89 20:38:13
PRINTING: 20-MAR-89 20:38:19

PATH=:UDD: U:BEVERLY:TORPLOT

TORPLOT

NSSFC /SYSB/ Kansas City MO

AOS/VS II RELEASE 1.00.00.00
AOS/VS II XLPT-32 REVISION 1.00.00.00

NPPI-580-005
EA
3-4/36

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Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	RIRAN	Area sq.mi
*50	5	4	2100	IA	001	1	4057	9544	0	0	0	0	0	0	1	1	353./ 36.	.00
*50	5	8	1320	IA	002	1	4102	9516	4101	9513	2	60	0	0	0	2 3	22./ 44.	.32
*50	5	5	340	KS	004	2	3937	9537	3951	9231	15	132	0	12	5	3 3 3	329./ 44.	3.92
50	5	8	2117	KS	008	1	3924	9739	0	0	0	0	0	1	4	1	239./110.	.00
50	5	8	2130	KS	009	1	3943	9746	0	0	0	0	0	0	0	1	249./106.	.00
50	5	9	1	KS	010	1	3912	9635	0	0	0	0	0	0	4		213./ 82.	.00
50	5	24	1730	KS	017	1	3925	9638	3927	9647	5	12	0	0	4	1 2 1	227./ 85.	.12
50	7	1	1200	KS	022	1	3842	9705	0	0	0	0	0	0	4	2 0	214./120.	.00
50	7	1	1200	KS	023	1	3918	9653	0	0	0	0	0	1	4	1	225./ 87.	.00
50	7	8	2245	KS	025	1	3947	9648	0	0	1	27	0	0	4	1 0 2	239./ 63.	.05
*50	5	3	2210	NE	001	1	4023	9549	4017	9541	4	140	0	1	4	3 2 4	285./ 8.	1.23
50	6	22	2100	NE	004	1	4011	9802	4012	9739	2	0	0	0	0	5 1 1	265./110.	.00
50	7	15	1730	NE	005	1	4148	9636	4144	9625	9	132	0	33	6	4 2 3	334./ 97.	2.37
50	9	21	1730	NE	006	1	4043	9649	4043	9623	11	20	0	0	3	1 3 1	292./ 59.	.43
*51	3	2	2030	KS	002	1	3950	9543	0	0	0	0	0	0	2		187./ 31.	.00
51	5	2	1930	KS	010	1	3902	9548	0	0	0	3	0	0	2	1 0	186./ 79.	.00
*51	5	2	2030	KS	011	1	3924	9526	0	0	0	0	0	0	2	1	169./ 54.	.00
51	5	9	700	KS	013	1	3918	9530	3920	9529	2	0	0	0	2	1 1 1	174./ 63.	.00
51	5	9	2100	KS	019	1	3847	533	0	0	0	0	0	0	0	0	178./ 54.	.00
51	5	21	100	KS	022	1	3702	9658	0	0	0	0	0	0	2	2 0	218./10[illegible]	.00
51	5	25	1430	KS	024	1	3927	9730	0	0	0	0	0	0	3	1	238./102.	.00
51	5	25	1600	KS	025	1	3916	9711	3919	9708	4	132	1	0	5	3 2 3	223./ 97.	1.09
51	5	25	1800	KS	026	1	3956	9726	0	0	0	0	0	0	3	2	233./ 87.	.00
51	5	30	2250	KS	028	1	3924	9711	0	0	0	0	0	0	3		232./ 92.	.00
51	5	30	2250	KS	029	1	3908	9703	3913	9656	8	0	0	0	3	1 2 2	222./ 98.	.00
51	5	30	2250	KS	030	1	3917	9701	0	0	0	0	0	0	3	0	225./ 91.	.00
51	5	30	2250	KS	031	1	3915	9635	0	0	0	0	0	0	3		214./ 79.	.00
*51	5	30	2250	KS	032	1	3921	9627	3924	9619	7	0	0	0	3	1 2 2	212./ 71.	.00
*51	5	30	2250	KS	033	1	3924	9602	0	0	0	0	0	0	3		198./ 60.	.00
*51	5	30	2250	KS	034	1	3923	9544	0	0	0	0	0	0	3		185./ 53.	.00
*51	5	31	2345	KS	035	1	3922	9524	3924	9521	3	132	0	0	3	2 1 3	170./ 60.	.83
51	6	1	2000	KS	036	1	3944	9759	3947	9747	11	0	0	0	3	1 3 2	251./115.	.00
51	6	8	1330	KS	046	1	3825	9537	0	0	0	180	0	0	2	1 0 4	180./116.	.27
51	6	8	1700	KS	047	1	3853	9521	0	0	0	0	0	0	3	2 1	171./ 89.	.00
51	6	15	1915	KS	048	1	3904	9547	0	0	0	30	0	0	1	0 0 2	185./ 77.	.03
51	6	17	2300	KS	052	1	3837	9505	0	0	0	0	0	0	3		166./107.	.00
51	7	22	50	KS	065	1	3929	9735	3924	9729	7	0	0	0	3	2 2	240./104.	.00
51	8	24	730	KS	073	1	3840	9510	0	0	0	0	0	0	3		165./103.	.00
51	8	31	1620	KS	076	1	3843	9657	0	0	0	0	0	0	4		211./118.	.00
*51	5	25	2100	MO	001	1	4024	9510	0	0	0	3	0	0	3	1 0 0	82./ 22.	.00
51	7	8	2015	MO	004	1	3913	9401	3915	9401	0	30	0	0	4	2 0 2	132./101.	.01
51	4	30	900	NE	001	1	4105	9800	0	0	0	15	0	0	3	1 0 1	292./115.	.04
52	6	2	1830	IA	003	1	4154	9524	4153	9520	3	30	0	1	0	2 1 2	6./ 94.	.23
52	4	22	1730	KS	002	1	3911	9645	0	0	0	0	0	0	0		217./ 87.	.00
52	5	21	1930	KS	007	1	3941	9752	0	0	0	30	0	0	4	2 0 2	249./111.	.01
52	5	22	1745	KS	008	3	3859	9513	3904	9443	27	132	0	3	5	4 3 3	167./ 84.	6.86
52	6	21	1900	KS	010	1	3908	9509	3908	9441	22	0	0	0	4	2 3 2	163./ 76.	.00
52	8	14	2130	KS	018	1	3841	9701	0	0	1	30	0	0	4	2 0 2	213./112.	.09
*52	11	17	1	KS	019	1	3940	9552	0	0	0	0	0	0	0	1	195./ 42.	.00
52	5	7	1600	MO	005	1	4006	9432	0	0	1	120	0	0	2	1 1 3	107./ 53.	.14
52	5	22	1900	MO	006	1	3854	9416	3856	9414	2	132	0	1	5	2 1 3	144./109.	.73
*52	11	16	1600	MO	009	1	4027	9504	4034	9441	19	180	0	2	4	3 3 4	77./ 27.	6.65
52	6	26	2000	NE	006	1	4035	9656	4035	9655	2	0	0	0	0	2 1 1	236./ 62.	.00
*52	8	13	1930	NE	008	2	4113	9635	4056	9613	27	33	0	20	5	4 3 2	320./ 67.	1.71
52	5	13	1745	NE	009	2	4128	9717	4115	9623	24	390	0	1	0	3 3 4	312./100.	18.13

'*' before year means event ocurred within a 2 degree square centered on central point

NPPI- SBO-005
EH 3-5/86

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NPPM- SBO-005
EPL 3-6/36

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seg	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AIRAN	Area sq.mi
53	3	21	1245	IA	001	1	4216	9541	0	0	0	0	0	2	3	1 1	359./113.	.00
53	3	21	1300	IA	002	1	4203	9543	4156	9552	11	1?0	0	0	4	1 3 4	358./102.	3.80
53	5	10	1535	IA	006	1	4052	9320	4054	9316	6	0	0	0	4	4 2 3	73./109.	.00
53	6	7	2130	IA	015	3	4222	9529	4313	9423	16	250	0	0	0	2 2 4	3./121.	7.64
53	6	7	2230	IA	019	2	4125	9355	4152	9145	115	60	0	0	0	2 5 3	50./100.	13.15
53	6	27	1545	IA	020	1	4127	9462	0	0	0	30	1	2	5	5 2	32./ 78.	.00
*53	6	27	1645	IA	021	1	4101	9505	0	0	0	30	0	0	4	1 2	32./ 47.	.00
53	6	27	1715	IA	022	1	4123	9335	0	0	0	30	0	2	4	1 2	56./111.	.00
53	5	9	2110	KS	003	1	3948	9754	3959	9748	13	0	0	0	4	3 3 2	252./110.	.09
53	5	16	1530	KS	009	1	3832	9652	0	0	2	66	0	0	3	1 1 3	209./125.	.31
53	6	17	1335	KS	020	1	3836	9734	3836	9654	8	0	0	0	4	2 2 1	213./125.	.00
*53	6	19	1500	KS	021	1	3936	9536	0	0	0	0	0	0	0	2 1	178./ 45.	.00
53	6	22	1900	KS	024	1	3903	9522	0	0	0	0	0	0	0		204./ 85.	.00
53	7	4	1600	KS	027	1	3930	9730	0	0	1	30	0	0	3	0 1 2	239./100.	.06
53	8	2	1500	KS	029	1	3943	9647	3945	9643	4	0	0	0	3	1 2 1	234./ 65.	.00
53	4	28	1900	NE	002	1	4053	9745	0	0	0	0	0	0	2		288./101.	.00
53	5	9	2245	NE	004	3	4015	9734	4046	9703	44	264	5	82	6	3 4 3	266./ 89.	22.39
53	5	10	110	NE	005	1	4056	9717	0	0	0	0	0	0	3		295./ 83.	.00
*53	5	10	600	NE	007	1	4011	9536	4003	9552	9	0	0	0	3	1 2 1	234./ 17.	.00
*53	5	10	1330	NE	008	1	4038	9552	0	0	0	10	0	0	3	0 1	328./ 20.	.00
53	5	29	2130	NE	011	1	4103	9813	0	0	0	0	0	0	0	1 1	290./124.	.00
53	6	7	1500	NE	016	1	4047	9810	4052	9815	7	0	0	0	4	2 2 1	283./119.	.00
53	6	7	1500	NE	017	1	4050	9813	4053	9809	4	0	0	0	3	0 2 1	284./121.	.00
53	6	7	1500	NE	018	1	4112	9717	4125	9657	22	0	0	2	6	1 3 2	304./ 90.	.00
53	6	7	1900	NE	028	1	4135	9633	0	0	1	0	0	5	0	0 1 1	331./ 86.	.00
53	6	7	1600	NE	029	1	4121	9704	4125	9657	7	0	0	2	5	2 2 1	313./ 85.	.00
53	6	7	1845	NE	030	1	4133	9615	4134	9610	4	0	0	1	4	2 2 1	339./ 77.	.00
· 3	7	3	1530	NE	036	1	4107	9627	4104	9623	4	0	0	0	3	2 1	321./ 59.	.00
53	7	21	1600	NE	039	1	4049	9729	0	0	0	0	0	0	3	1 0 1	288./ 87.	.00
53	7	26	1630	NE	040	1	4140	9642	0	0	0	0	0	0	2		329./ 92.	.00
' 3	7	26	2000	NE	041	1	4127	9720	4135	9715	5	0	0	0	0	1 2 2	311./101.	.00
53	8	2	1530	NE	043	1	4005	9645	4005	9642	2	0	0	0	3	2 1 1	253./ 54.	.00
54	4	5	1710	IA	002	1	4202	9432	4206	9423	2	254	0	1	5	2 1 4	26./112.	1.43
*54	4	5	1730	IA	003	1	4036	9514	4040	9510	3	200	0	0	0	3 2 4	51./ 24.	1.31
*54	4	5	1745	IA	004	1	4040	9453	4043	9440	11	100	0	0	2	2 3 3	61./ 39.	2.25
*54	4	5	1815	IA	005	1	4041	9444	0	0	0	60	0	0	2	1 2	64./ 46.	.00
54	6	7	2200	IA	016	1	4217	9443	4223	9434	6	132	1	0	5	4 2 3	19./123.	1.55
*54	3	12	1220	KS	002	1	3935	9528	0	0	0	0	0	0	3	1	171./ 47.	.00
54	3	18	1115	KS	005	1	3849	9658	0	0	0	0	0	0	3	1	214./112.	.00
54	3	18	1135	KS	006	1	3932	9655	0	0	2	132	0	0	3	1 1 3	217./ 99.	.50
54	3	18	1215	KS	008	1	3837	9612	0	0	2	132	0	0	2	1 1 3	194./107.	.50
54	3	18	1225	KS	009	1	3845	9607	0	0	0	0	0	0	3	2	193./ 97.	.00
54	3	18	1230	KS	010	1	3841	9558	0	0	0	0	0	0	2	1	189./101.	.00
54	3	18	1310	KS	011	1	3854	9542	0	0	0	0	0	0	3	1	182./ 87.	.00
54	3	18	1315	KS	012	1	3847	9533	0	0	0	0	0	0	3	2	178./ 94.	.00
*54	3	18	1315	KS	013	1	3951	9531	0	0	2	40	0	0	2	1 2	170./ 30.	.19
54	3	18	1330	KS	014	1	3916	9516	0	0	0	30	0	0	0	1 2	165./ 67.	.00
54	3	18	1200	KS	015	1	3923	9646	0	0	0	10	0	0	3	1 0 1	222./ 79.	.01
*54	3	18	1200	KS	016	1	3940	9531	0	0	0	0	0	0	0	2	173./ 41.	.00
54	3	24	2030	KS	017	1	3844	9503	0	0	0	0	0	0	3	2 1	164./101.	.00
54	4	5	1845	KS	021	1	3911	9655	3917	9646	9	0	0	0	0	2 2 1	220./ 92.	.00
*54	4	5	1930	KS	022	1	3922	9557	3921	9553	3	30	0	0	4	1 1 2	194./ 61.	.19
54	4	10	1830	KS	023	1	3820	9531	0	0	0	0	0	0	3	2 1	177./121.	.00
54	5	31	1510	KS	036	1	3853	9443	0	0	2	0	0	0	4	2 1 1	154./ 98.	.00
54	6	11	2000	KS	042	1	3337	9612	0	0	0	0	0	0	0		197./109.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

08665 0374

NPP1 - SB0 - 005
#34 3-7/36

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo Day	Time (CST)	St Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
54	6 21	1615	KS 049	1	3922	9745	3922	9741	3	0	0	0	0	1 1 1	239./115.	.00
54	6 30	1830	KS 050	1	3852	9449	0	0	1	0	0	0	3	0 0 0	157./ 97.	.00
54	8 5	1930	KS 058	1	3831	9522	0	0	2	60	0	0	4	1 1 3	174./111.	.23
54	8 5	2015	KS 059	1	3837	9516	0	0	1	90	0	2	4	1 0 3	171./105.	.17
54	8 22	1600	KS 062	1	3949	9809	0	0	2	240	0	0	0	0 1 4	251./123.	.91
54	5 7	1600	MO 023	1	4005	9430	0	0	0	3	0	0	2	0 0 0	107./ 54.	.00
*54	5 31	1445	MO 026	2	4023	9525	4027	9501	10	132	0	0	4	2 3 3	79./ 10.	2.69
54	6 2	1730	MO 028	1	3945	9330	3952	9323	10	45	9	0	4	1 2 2	110./105.	.37
54	6 14	2100	MO 029	1	4002	9429	0	0	0	3	0	0	2	0 0 0	110./ 56.	.00
*54	6 15	1300	MO 030	1	4003	9516	0	0	0	3	0	0	1	1 0 0	137./ 25.	.00
*54	6 11	30	NE 006	1	4024	9601	0	0	0	0	0	0	3	0 0	290./ 15.	.00
54	6 17	2315	NE 009	2	4205	9703	4212	9642	15	49	1	0	5	3 3 2	329./122.	1.45
*54	7 20	1700	NE 012	1	4018	9615	0	0	1	10	0	0	3	1 0 1	264./ 23.	.02
54	7 30	1610	NE 014	1	4052	9737	0	0	1	264	0	0	4	2 1 4	287./ 95.	.75
54	8 25	330	NE 016	1	4210	9640	0	0	0	0	0	0	3	0 0	337./119.	.00
*55	4 3	1900	IA 001	1	4045	9502	0	0	0	132	0	0	3	1 0 3	49./ 35.	.13
55	4 4	1610	IA 002	1	4145	9359	4136	9355	4	132	0	0	4	2 2 3	41./113.	1.20
*55	4 23	1310	IA 005	1	4038	9514	0	0	1	9	0	0	4	2 0 1	47./ 25.	.03
55	4 23	1500	IA 006	1	4343	9421	4048	9419	4	132	0	0	4	3 2 3	69./ 62.	1.05
55	5 6	1615	IA 007	1	4139	9510	4148	9505	7	60	0	0	4	2 2 3	10./ 79.	.90
55	4 27	1900	KS 007	1	3902	9716	0	0	0	0	0	0	0	1 1	224./110.	.00
55	5 26	27	KS 014	1	3838	9547	3919	9455	66	0	0	0	3	2 4 2	184./103.	.00
*55	5 26	1730	KS 016	1	3941	9459	3946	9453	7	66	0	1	4	2 2 3	143./ 50.	.93
*55	5 27	2040	KS 026	1	3926	9635	0	0	0	0	0	0	0		219./ 70.	.00
55	6 2	2130	KS 039	1	3925	9759	3934	9740	19	0	0	0	3	1 3 1	243./122.	.00
55	6 3	1200	KS 042	1	3938	9746	0	0	0	0	0	0	0	0	246./109.	.00
55	6 4	1945	KS 072	1	3934	9717	0	0	0	0	0	0	0		235./ 90.	.00
55	6 30	1840	KS 089	1	3933	9738	0	0	1	0	0	0	0	1 1 1	243./104.	.00
55	6 30	1915	KS 091	1	3935	9717	0	0	0	0	0	0	0		239./ 87.	.00
55	9 21	1550	KS 097	1	3818	9533	0	0	0	10	0	0	3	2 0 1	178./121.	.01
55	3 14	1730	MO 001	1	3939	9415	3940	9401	8	75	0	1	5	3 2 3	123./ 76.	1.24
55	3 14	1740	MO 002	1	3918	9415	3920	9410	3	75	0	0	4	2 2 3	134./ 91.	.50
55	3 14	1800	MO 003	1	3921	9414	0	0	3	30	0	0	1	1 0 2	133./ 85.	.02
55	4 23	1330	MO 011	1	4031	9432	4033	9429	3	30	0	1	4	2 1 2	79./ 51.	.29
*55	4 23	1330	MO 012	1	4026	9518	4028	9515	2	30	0	0	4	2 1 2	72./ 16.	.13
55	4 26	300	MO 016	1	4019	9339	0	0	1	30	0	0	1	1 1 2	91./ 91.	.05
55	5 26	1800	MO 019	1	3920	9340	0	0	0	3	0	1	4	0 0 0	124./110.	.00
55	5 26	1900	MO 021	1	3950	9313	0	0	0	3	0	0	3	1 0 0	106./116.	.00
55	5 26	1900	MO 022	1	3950	9313	0	0	0	3	0	0	0	0 0 0	106./116.	.00
55	5 27	2100	MO 025	1	3844	9424	0	0	0	3	0	0	3	1 0 0	149./113.	.00
55	9 24	430	MO 029	1	3838	9410	0	0	0	3	0	0	4	1 0 0	146./126.	.00
55	4 27	2130	NE 001	1	4044	9647	0	0	0	0	0	0	3	1 0 1	274./ 57.	.00
55	5 26	1700	NE 004	1	4219	9630	4223	9633	5	5	0	0	0	1 2 0	342./124.	.05
55	6 4	1900	NE 009	1	4001	9730	0	0	0	0	0	0	0	1 1	257./ 88.	.00
55	6 4	2125	NE 010	1	4127	9602	0	0	0	0	0	0	0	0 0 1	345./ 68.	.00
55	7 9	2200	NE 017	1	4104	9748	0	0	0	0	0	0	4	1	294./107.	.00
55	9 20	2000	NE 031	1	4014	9738	4018	9753	6	0	0	0	3	1 2 1	265./107.	.00
*56	5 29	2300	IA 004	1	4121	9457	4123	9453	4	15	0	0	2	2 2 1	27./ 67.	.12
56	5 29	2030	KS 019	1	4000	9638	3952	9638	4	0	0	0	0	1 2 2	265./ 51.	.00
56	6 18	620	KS 024	1	3915	9454	0	0	0	8	0	0	3	2 0 1	153./ 74.	.01
*56	6 19	1715	KS 025	1	3937	9637	0	0	0	0	0	0	0	1 1	226./ 63.	.00
*55	6 26	200	KS 030	1	3945	9622	0	0	0	0	0	0	0	1	223./ 49.	.00
56	7 2	1645	KS 033	1	3848	9511	3848	9507	1	0	0	0	0	2 1 2	167./ 93.	.00
56	7 7	2200	KS 038	1	3853	9520	3848	9513	7	0	0	0	3	* 2 2	171./ 87.	.00
*56	12 4	1800	KS 059	1	3946	9457	0	0	0	15	0	1	0	0 1	138./ 47.	.01

"*" before year means event ocurred within a 2 degree square centered on central point

08665 9375

NPP1-SB0-005
3-8/36

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	St	Seq	Total # Seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
56	4	2	100	MO	013	1	4026	9415	4029	9414	1	7	0	0	3	1 1 1	85./ 63.	.03
*56	4	28	300	MO	015	1	3935	9446	0	0	2	10	0	0	2	1 1 1	139./ 61.	.04
56	7	2	1430	MO	016	1	3923	9413	0	0	0	3	0	0	2	1 0 0	131./ 88.	.00
56	7	11	2200	MO	018	1	4032	9437	0	0	0	3	0	0	1	0 0 0	77./ 48.	.00
*56	4	2	2245	NE	001	1	4022	9550	4024	9547	3	30	0	0	3	2 1 2	276./ 9.	.20
56	4	28	115	NE	002	1	4015	9723	4029	9642	39	0	0	1	5	3 4 2	266./ 80.	.00
56	5	10	2000	NE	004	1	4127	9624	4133	9616	4	132	0	0	3	1 2 3	332./ 74.	1.22
56	5	12	2000	NE	005	1	4120	9736	0	0	4	0	0	0	4	1 1 1	304./106.	.00
*56	5	12	2200	NE	006	1	4117	9600	4115	9557	3	0	0	0	5	1 1 1	344./ 59.	.00
56	5	29	2130	NE	007	1	4004	9552	4004	9649	2	0	0	0	4	2 1 2	255./ 59.	.00
56	5	30	1630	NE	008	1	4035	9750	4038	9746	2	90	0	0	4	1 1 3	278./101.	.42
55	6	6	1845	NE	011	1	5033	9740	4022	9728	16	0	0	3	5	2 3 2	277./ 93.	.00
56	6	6	1920	NE	012	1	4044	9553	4042	9651	2	0	0	1	3	2 1 1	292./ 61.	.00
56	6	6	1930	NE	013	1	4046	9652	0	0	0	0	0	1	3	1 0 1	294./ 61.	.00
*56	6	6	1930	NE	014	1	4053	9636	0	0	1	30	0	0	0	1 1 2	304./ 51.	.07
56	7	1	200	NE	019	1	4158	9655	0	0	0	0	0	0	3	0 0 0	329./113.	.00
56	7	19	1900	NE	024	1	4124	9637	0	0	0	0	0	0	0		325./ 77.	.00
*56	7	28	430	NE	025	1	4049	9558	0	0	1	30	0	0	3	1 1 2	331./ 31.	.06
56	7	30	1530	NE	026	1	4120	9638	0	0	0	0	0	0	3	1 0	323./ 74.	.00
*56	9	3	1700	NE	027	1	4012	9606	0	0	2	0	0	0	0	1 1 1	247./ 23.	.00
*57	4	25	1130	IA	002	1	4106	9500	0	0	0	30	0	0	4	0 2	32./ 53.	.00
*57	5	25	2315	IA	006	1	4055	9507	4058	9503	1	300	0	0	4	0 1 4	35./ 41.	1.11
57	5	30	1435	IA	010	1	4144	9525	0	0	0	0	0	0	0		5./ 83.	.00
57	5	30	1650	IA	011	1	4211	9502	0	0	0	0	0	0	0		14./113.	.00
57	7	4	228	IA	016	1	4212	9512	0	0	0	0	0	1	1	1	10./113.	.00
57	7	21	1100	IA	017	1	4045	9348	0	0	0	0	0	0	0		74./ 87.	.00
57	4	22	1645	KS	003	1	3917	9737	3920	9704	4	90	0	0	3	1 2 3	227./ 94.	.74
57	4	22	1645	KS	004	1	3917	9707	3920	9704	4	90	0	0	3	1 2 3	227./ 94.	.74
57	5	20	1450	KS	026	1	3923	9744	3953	9712	44	120	0	0	5	4 4 3	239./113.	10.15
57	5	20	1450	KS	027	1	3929	9738	0	0	0	0	0	0	0	2 1	243./107.	.00
57	5	20	1-50	KS	028	1	3931	9738	0	0	0	0	0	0	0	2 1	242./105.	.00
57	5	20	1450	KS	029	1	3931	9739	0	0	0	0	0	0	0	2 1	242./105.	.00
57	5	20	1450	KS	030	1	3934	9734	3938	9729	6	0	0	0	0	3 2 1	242./101.	.00
57	5	20	1937	KS	034	1	3830	9526	3832	9520	5	0	0	0	0	3 2 1	175./111.	.00
57	6	11	1800	KS	044	1	3852	9514	3854	9512	2	0	0	0	0	2 1 1	169./ 91.	.00
57	6	11	1945	KS	045	1	3858	9548	0	0	0	18	0	0	0	0 0 2	155./ 83.	.01
57	6	11	2004	KS	046	1	3856	9449	0	0	0	30	0	0	4	1 0 2	156./ 93.	.01
57	6	14	105	KS	048	1	3859	9652	0	0	0	0	0	0	0	1 1	215./100.	.00
57	6	21	2000	KS	055	1	3742	9745	0	0	0	0	0	0	C	1	248./105.	.00
57	6	21	2330	KS	058	1	3859	9456	3901	9446	9	120	0	2	5	1 2 3	158./ 88.	2.10
57	6	23	2300	KS	062	1	3854	9710	0	0	0	6	0	3	3	1	217./113.	.00
57	5	20	1700	MO	011	1	3951	9421	3957	9413	7	50	0	0	4	2 2 3	117./ 66.	.30
57	5	20	1937	MO	013	1	3912	9412	3917	9359	12	10	0	0	4	2 3 1	136./ 95.	.25
*57	6	7	1600	MO	027	1	4002	9500	0	0	0	12	0	0	2	1 0 1	123./ 35.	.00
57	6	7	2000	MO	028	1	3938	9435	0	0	0	3	0	0	1	0 0 0	132./ 65.	.00
57	6	14	400	MO	030	1	3949	9335	0	0	0	90	0	0	4	1 0 3	107./100.	.09
57	6	22	0	MO	033	1	3900	9435	3915	9424	19	3	0	0	2	2 3 0	149./ 95.	.11
57	7	21	1530	MO	034	1	4032	9345	0	0	0	3	0	0	3	0 0 0	83./ 87.	.00
57	4	25	1915	NE	008	3	4035	9734	4111	9602	89	0	1	8	6	4 3 3	277./ 89.	.00
57	4	25	1900	NE	009	1	4022	9757	4039	9724	27	66	0	0	5	3 3 3	271./106.	3.43
*57	5	7	1540	NE	010	1	4032	9618	4039	9611	10	36	0	0	4	2 2 2	290./ 32.	.69
*57	5	13	1845	NE	012	1	4108	9602	0	0	2	0	0	0	3	1 1 1	339./ 50.	.00
*57	5	13	1900	NE	013	1	4114	9601	0	0	0	0	0	0	1	1	342./ 56.	.00
*57	5	16	1200	NE	014	1	4105	9616	0	0	0	0	0	0	3	1 0 0	329./ 55.	.00
57	5	20	1420	NE	020	1	4004	9516	0	0	0	0	0	0	1		262./122.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

0 9 6 6 5   9 3 7 6

NPPI- SB0-005
3-9/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	st	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq-mi
57	5	20	1600	NE	022	1	4004	9730	4042	9620	60	0	0	0	5	2 4 2	259./ 87.	.00
57	5	20	1720	NE	023	1	4041	9715	4050	9650	12	0	0	0	4	2 3 2	255./ 76.	.00
57	6	6	2130	NE	026	1	4055	9727	4100	9725	4	0	0	0	3	1 2 1	293./ 89.	.00
57	6	13	1020	NE	028	1	4129	9737	4128	9733	3	0	0	0	3	1 1 1	307./112.	.00
57	6	13	1830	NE	029	1	4107	9708	0	0	0	0	0	0	3	1 0 0	304./ 82.	.00
*57	6	15	1400	NE	031	1	4014	9619	4016	9612	6	0	0	0	0	1 2 1	257./ 32.	.00
57	6	15	2015	NE	032	1	4047	9714	4056	9704	13	0	0	0	4	2 3 1	290./ 77.	.00
*57	6	15	2100	NE	033	1	4111	9633	4121	9611	17	0	0	0	4	1 3 2	320./ 65.	.00
57	6	15	2000	NE	034	1	4102	9642	0	0	0	0	0	0	1	1	307./ 67.	.00
57	6	21	1815	NE	036	1	4054	9728	4054	9721	5	0	0	0	5	3 2 2	292./ 59.	.00
57	6	21	1830	NE	037	1	4121	9719	0	0	1	30	0	0	2	1 1 2	305./ 97.	.05
57	6	21	1852	NE	038	1	4106	9650	0	0	0	0	0	0	1		310./ 71.	.00
57	6	27	1900	NE	039	1	4012	9755	4014	9744	9	0	0	0	4	1 2 2	265./105.	.00
57	6	27	1935	NE	040	1	4020	9748	4024	9743	6	0	0	0	1	0 2 1	269./ 99.	.00
57	7	2	2030	NE	042	1	4159	9655	0	0	0	0	0	0	1	1 0 1	330./113.	.00
57	7	19	1330	NE	048	1	4123	9730	0	0	0	0	0	0	0	1	306./104.	.00
57	7	19	1730	NE	049	1	4047	9804	4059	9804	13	0	0	0	4	3 1	283./114.	.00
57	7	19	1750	NE	050	1	4047	9804	4059	9804	15	0	0	0	0	3 1	283./114.	.00
57	7	19	1730	NE	051	1	4047	9804	4059	9804	13	0	0	0	0	3 1	283./114.	.00
57	8	16	1600	NE	053	1	4001	9305	0	0	0	0	0	0	0		260./114.	.00
58	3	30	1500	IA	002	1	4140	9341	0	0	0	0	0	0	0		48./119.	.00
58	6	22	1500	IA	009	1	4043	9335	0	0	1	15	0	0	3	1 1 1	74./ 97.	.03
58	7	16	1815	IA	011	2	4104	9436	4050	9434	6	30	0	1	5	3 2 2	47./ 64.	.37
*58	4	4	1730	KS	001	1	3933	9559	0	0	1	0	0	0	1	0 1	199./ 51.	.00
58	5	31	1345	KS	004	1	3840	9511	0	0	1	18	0	0	4	2 0 2	165./103.	.01
58	5	31	1845	KS	005	1	3844	9513	3847	9510	3	0	0	0	4	2 2 1	169./ 99.	.00
*58	5	12	207	KS	013	1	3925	9556	0	0	0	0	0	0	0		196./ 58.	.00
58	6	12	1608	KS	017	1	3915	9631	0	0	0	0	0	0	0	1 1	212./ 78.	.00
58	6	12	1630	KS	019	1	3902	9600	3902	9555	4	60	0	0	4	2 2 3	192./ 81.	.46
*58	6	12	1745	KS	020	1	3944	9523	3945	9507	7	60	0	0	0	2 3	163./ 39.	.81
58	6	14	2030	KS	023	1	3843	9500	3843	9451	7	9	0	0	0	0 2 1	153./102.	.12
58	6	15	300	KS	025	1	3840	9627	0	0	0	0	0	0	0	0	201./109.	.00
58	6	22	1340	KS	027	1	3705	9443	0	0	0	8	0	0	0	1 0 1	155./ 87.	.03
58	6	24	2130	KS	028	1	3829	9614	0	0	2	15	0	0	0	1 1 1	194./115.	.05
58	7	11	45	KS	031	1	3900	9534	0	0	0	0	0	0	0	2 1	178./ 81.	.00
58	7	11	105	KS	032	1	3855	9551	0	0	0	0	0	0	0	2 1	187./ 57.	.00
58	7	11	120	KS	033	1	3920	9551	0	0	0	0	0	0	0	1 1	159./ 62.	.00
58	7	11	200	KS	034	1	3843	9449	0	0	1	0	0	0	0	1 0 1	159./105.	.00
58	11	17	1020	KS	044	1	3911	9502	0	0	0	0	0	0	3	2	158./ 75.	.00
58	11	17	1355	KS	046	1	3930	9537	0	0	0	0	0	0	0	2	180./111.	.00
58	11	17	1100	KS	047	1	3837	9525	0	0	0	0	0	0	2	2	176./104.	.00
58	11	17	1110	KS	048	1	3845	9523	0	0	0	0	0	0	0	1	173./ 97.	.00
58	11	17	1115	KS	049	1	3906	9506	0	0	0	0	0	0	0		162./ 79.	.00
58	6	15	1630	MO	013	1	4035	9337	0	0	0	3	0	0	4	1 0 0	81./ 93.	.00
58	6	24	2135	MO	014	1	3908	9359	0	0	0	10	0	0	4	1 0 1	134./106.	.01
58	6	26	2230	MO	015	1	3904	9350	0	0	0	10	0	0	4	1 0 1	133./114.	.01
58	7	7	30	MO	016	1	4000	9348	0	0	0	3	0	0	4	1 0 0	104./ 87.	.00
58	7	17	730	MO	018	1	3920	9401	0	0	2	10	0	0	5	2 1 1	129./ 97.	.04
*58	7	27	207	MO	019	1	4033	9532	0	0	0	3	0	0	3	1 0 0	21./ 13.	.00
58	7	31	400	MO	020	1	3939	9327	0	0	0	3	0	0	3	1 0 0	113./110.	.00
*58	10	8	1945	MO	025	3	4025	9438	4027	9409	17	90	2	7	5	3 3 3	85./ 46.	3.04
*58	11	16	1750	MO	026	1	4021	9504	0	0	0	30	0	0	3	1 0 2	90./ 26.	.01
58	11	17	1330	MO	028	1	4025	9302	4030	9259	3	15	0	0	4	1 1 1	87./119.	.10
58	11	17	1345	MO	030	1	4003	9327	4013	9316	9	15	0	0	5	2 2 1	100./102.	.26
58	11	17	1400	MO	031	1	4312	9356	4016	9354	4	30	0	0	5	2 2 2	97./ 78.	.23

"*" before year means event ocurred within a 2 degree square centered on central point

08665 0377

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
58	4	4	1600	NE	001	1	4057	9708	0	0	0	0	0	0	1	1	297./ 78.	.00
*58	4	4	1745	NE	002	1	4041	9552	4047	9551	6	0	0	0	3	1 2	332./ 25.	.00
58	5	14	1540	NE	003	1	4005	9736	0	0	0	0	0	0	1		260./ 92.	.00
58	5	30	300	NE	005	1	4132	9621	0	0	0	45	0	0	2	1 0 2	336./ 78.	.01
58	6	4	1900	NE	008	1	4045	9705	0	0	0	0	0	0	4		291./ 70.	.00
58	7	3	1430	NE	026	2	4009	9651	4018	9616	32	0	0	2	5	2 4 1	258./ 57.	.00
58	7	8	2055	NE	030	1	4121	9714	0	0	0	0	0	0	2	0 0	310./ 94.	.00
*58	7	10	55	NE	031	1	4035	9633	0	0	1	0	0	0	2	1 0	259./ 44.	.00
58	7	11	100	NE	033	1	4027	9721	0	0	0	0	0	0	5		274./ 79.	.00
58	8	4	2100	NE	044	1	4150	9725	0	0	0	0	0	0	3	1	318./117.	.00
*58	8	5	1730	NE	045	1	4117	9636	0	0	0	0	0	0	3	0 0	322./ 71.	.00
*58	8	5	1810	NE	046	1	4059	9610	0	0	0	0	0	0	4	1	328./ 45.	.00
58	8	5	1930	NE	047	1	4052	9759	0	0	0	44	0	0	3	1 0 2	286./111.	.02
*58	8	5	2200	NE	048	1	4036	9623	0	0	0	0	0	6	5	1	294./ 37.	.00
58	8	5	2300	NE	049	1	4057	9736	0	0	0	0	0	0	3	1	292./ 96.	.00
*58	8	23	1930	NE	052	1	4030	9544	0	0	0	0	0	0	3	0 0	333./ 10.	.00
*58	9	5	1700	NE	054	1	4100	9615	0	0	0	0	0	0	3		324./ 45.	.00
*59	5	4	2120	IA	001	1	4110	9510	4114	9502	2	30	0	0	4	1 1 2	23./ 53.	.14
59	5	4	2220	IA	002	1	4142	9455	4145	9451	1	30	0	0	3	2 1 2	22./ 87.	.08
59	5	4	2223	IA	003	1	4112	9426	4115	9419	2	30	0	0	3	2 1 2	48./ 75.	.15
59	5	4	2223	IA	004	1	4117	9430	4123	9425	2	30	0	0	3	2 1 2	42./ 76.	.16
59	5	4	2230	IA	005	1	4154	9420	4206	9415	16	45	0	0	4	2 3 2	32./110.	1.23
59	5	10	1300	IA	010	1	4130	9435	4156	9405	20	120	0	1	6	4 3 3	33./ 82.	4.55
*59	5	10	1430	IA	011	1	4056	9503	0	0	1	60	0	0	3	2 1 3	37./ 44.	.11
59	5	10	1700	IA	013	1	4132	9332	0	0	1	15	0	0	3	1 1 1	53./113.	.03
59	5	10	1753	IA	014	1	4136	9336	0	0	0	15	0	0	3	2 0 1	51./113.	.01
*59	5	15	1345	IA	015	1	4059	9444	0	0	1	60	0	0	5	2 1 3	47./ 56.	.11
59	5	20	1900	IA	016	1	4012	9309	4052	9254	17	132	0	5	5	4 3 3	79./115.	4.35
*59	5	26	800	IA	017	1	4035	9538	4049	9545	3	120	0	0	4	2 2 3	360./ 15.	.73
59	5	2	1200	KS	003	1	3951	9659	3937	9625	15	0	0	0	4	2 3 2	237./ 56.	.00
59	5	4	1749	KS	013	1	3915	9723	3915	9718	4	30	0	0	5	2 2 2	231./105.	.25
59	5	4	1830	KS	015	1	3933	9710	3935	9706	4	30	0	0	3	2 2	236./ 85.	.24
59	5	4	1930	KS	019	1	3838	9642	0	0	2	0	0	0	0	1 1	206./114.	.00
59	5	4	1930	KS	020	1	3837	9658	0	0	0	0	0	0	0	1	211./120.	.00
59	5	4	2015	KS	021	2	3901	9618	3901	9607	9	264	0	0	4	1 3 4	201./ 86.	4.92
*59	5	4	2030	KS	022	1	3955	9549	3935	9538	25	528	0	0	5	2 3 5	195./ 27.	25.02
*59	5	15	1550	KS	027	1	3949	9537	0	0	0	30	0	0	4	3 0 2	179./ 32.	.03
*59	5	18	1900	KS	028	1	3944	9525	0	0	1	264	0	0	3	2 1 4	165./ 38.	.50
*59	5	18	1935	KS	029	1	3944	9520	3939	9516	6	120	0	0	5	3 2 3	160./ 39.	1.34
59	5	29	1900	KS	046	1	3919	9605	0	0	2	60	0	0	0	0 1 3	198./ 68.	.23
59	5	29	1930	KS	048	1	3947	9654	0	0	0	45	0	0	3	1 C 2	241./ 67.	.02
59	5	29	1930	KS	049	1	3949	9647	0	0	0	0	0	1	0	2 1	239./ 62.	.00
59	6	11	1545	KS	051	1	3910	9641	0	0	0	0	0	0	0	1 1	148./ 84.	.00
59	6	15	1800	KS	052	1	3830	9612	0	0	0	0	0	0	0	1 1	193./114.	.00
59	12	26	1745	KS	066	1	3902	9719	0	0	2	0	0	0	0	2 1 1	225./111.	.00
*59	5	4	2130	MO	007	1	4017	9500	4034	9443	24	60	0	0	3	1 3 3	98./ 29.	2.79
*59	5	10	1600	MO	010	1	4031	9510	0	0	0	5	0	0	4	2 0 0	65./ 24.	.00
59	5	18	2300	MO	011	1	3943	9414	0	0	0	5	0	0	3	1 0 0	120./ 75.	.00
*59	5	20	2200	MO	012	1	3954	9442	0	0	0	5	0	0	4	1 0 0	122./ 51.	.00
59	5	20	2330	MO	015	1	4028	9345	4031	9339	6	3	0	3	4	1 2 0	85./ 56.	.04
*59	9	26	800	MO	016	1	3953	9468	0	0	0	3	0	0	3	1 0 0	126./ 47.	.00
59	9	[illegible]	800	MO	017	1	4011	9433	4012	9430	2	15	0	0	4	1 1 1	101./ 51.	.08
*59	9	[illegible]	807	MO	018	1	4001	9451	0	0	0	3	0	0	3	1 0 0	119./ 41.	.00
59	9	26	930	MO	019	2	4019	9345	4022	9337	0	15	0	0	4	2 2 1	91./ 85.	.02
*59	5	2	1315	NE	001	1	4104	9623	0	0	0	15	0	0	3	1 0 2	322./ 55.	.01

"*" before year means event ocurred within a 2 degree square centered on central point

NPPM-580-005
3-10/86

08665 -9378

NPP1-5B0-005
EH 3-11/36

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
59	5	4	1530	NE	004	1	4107	9801	0	0	0	0	0	0	3	1	293./117.	.00
59	5	4	1615	NE	005	1	4128	9743	4131	9732	10	0	0	0	3	1 2 1	306./115.	.00
59	5	4	1630	NE	006	1	4109	9654	0	0	0	0	0	1	3	1	319./ 75.	.00
59	5	4	1700	NE	007	1	4129	9743	0	0	0	0	0	0	3	0	306./116.	.00
59	5	4	1900	NE	008	1	4105	9747	0	0	0	0	0	0	3		294./107.	.00
59	5	4	1930	NE	009	1	4007	9640	4015	9636	9	0	0	0	4	1 2 1	254./ 49.	.00
*59	5	20	2100	NE	011	1	4114	9637	0	0	12	0	0	0	4	2 2 1	320./ 69.	.00
59	5	20	1900	NE	012	1	4127	9645	0	0	0	0	0	0	4	1 1	322./ 83.	.00
59	5	20	1900	NE	013	1	4002	9702	4021	9623	40	0	0	0	4	1 4 1	254./ 67.	.00
59	5	20	2100	NE	014	1	4126	9630	0	0	0	30	0	0	4	1 0 2	329./ 75.	.07
59	5	26	1730	NE	017	1	4153	9654	0	0	0	0	0	0	2	0	328./109.	.00
59	5	28	1845	NE	022	1	4049	9743	0	0	0	0	0	0	3	0 2	235./ 99.	.00
59	6	20	1425	NE	031	1	4101	9737	0	0	1	0	0	0	4	1 1 1	294./ 99.	.00
*59	7	*	2200	NE	036	1	4026	9633	4026	9625	4	0	0	0	4	1 2 1	277./ 42.	.00
59	8	9	600	NE	039	1	4120	9657	0	0	1	0	0	0	4	1 1	315./ 84.	.00
59	8	23	1700	NE	042	1	4026	9806	0	0	0	0	0	0	4		273./113.	.00
59	8	30	1700	NE	043	1	4055	9652	0	0	4	0	0	0	4	2 1 2	301./ 65.	.00
*59	9	21	200	NE	044	1	4021	9555	0	0	0	0	0	0	1	1 0 1	270./ 13.	.00
60	4	16	1630	IA	003	1	4048	9318	4054	9310	9	60	0	0	4	2 2 3	76./109.	1.11
60	5	5	1700	IA	005	1	4158	9449	4203	9433	4	45	0	0	5	2 2 2	21./104.	.36
60	5	5	2130	IA	006	1	4140	9357	0	0	1	30	0	0	4	1 1 2	44./109.	.04
60	6	16	1230	IA	011	1	4123	9334	0	0	2	45	0	0	4	2 1 2	36./112.	.17
*60	8	6	2250	IA	017	1	4112	9508	0	0	0	0	0	0	0	1 1	24./ 56.	.00
60	8	18	1330	IA	018	1	4113	9428	0	0	0	30	0	0	4	1 2	43./ 78.	.00
*60	11	27	2315	IA	027	1	4044	9505	4047	9500	5	30	0	0	4	1 2 2	47./ 34.	.32
60	4	13	1700	KS	002	1	3854	9732	0	0	1	45	0	0	3	2 0 2	226./124.	.09
60	4	15	1500	KS	003	1	3903	9530	0	0	0	0	0	0	1	0	159./ 83.	.00
60	4	15	1700	KS	005	1	3829	9517	3835	9510	8	23	0	0	4	3 2 2	172./113.	.37
60	5	15	1910	KS	016	1	3914	9713	0	0	0	0	0	0	2	0	223./100.	.00
60	5	16	50	KS	018	1	3912	9720	0	0	0	30	0	0	4	2 0 2	229./101.	.02
60	5	16	110	KS	019	1	3930	9704	3932	9659	4	75	0	0	4	1 2 3	232./ 54.	.64
*60	5	16	200	KS	020	1	3946	9629	3952	961[illegible]	6	0	0	0	4	2 1	228./ 53.	.00
60	5	19	1730	KS	022	1	3909	9620	3911	9557	18	0	0	12	7	4 3 2	204./ 79.	.09
60	5	19	1830	KS	023	2	3911	9557	3914	9526	22	264	1	92	6	4 3 4	192./ 72.	11.15
60	5	19	1804	KS	024	1	3914	9525	3913	9513	9	0	0	1	0	3 2 3	172./ 68.	.00
60	5	19	1930	KS	025	1	3913	9513	3919	9500	8	0	0	1	0	3 2 2	164./ 71.	.00
60	5	19	2030	KS	027	1	3906	9540	0	0	0	0	0	0	1	1	181./ 75.	.00
60	5	19	2045	KS	028	1	3907	9540	3909	9544	4	0	0	0	3	2 2 1	181./ 74.	.00
60	5	24	1430	KS	032	1	3843	9610	3852	9602	6	5	0	0	3	1 2 0	195./ 96.	.06
*60	6	1	1645	KS	035	1	3946	9608	3943	9607	3	30	0	0	4	0 1 2	213./ 42.	.18
60	6	1	1745	KS	039	1	3859	9716	0	0	0	0	0	0	1	1	223./112.	.00
60	6	1	1745	KS	040	1	3859	9709	0	0	0	0	0	0	1	0	221./108.	.00
60	11	27	1930	KS	057	1	3837	9702	0	0	0	0	0	0	3	1	212./123.	.00
60	11	27	1955	KS	058	1	3933	9739	0	0	2	50	0	2	5	3 1 2	243./105.	.19
*60	1	12	1420	MO	001	1	4016	9454	4017	9453	0	5	0	0	4	1 0	98./ 34.	.00
60	3	29	1530	MO	003	1	4005	9337	0	0	0	30	0	0	4	1 0 2	100./ 94.	.02
60	4	16	1530	MO	007	2	4018	9426	4025	9356	24	90	0	4	4	3 3 3	93./ 55.	4.22
60	4	16	1715	MO	008	2	4028	9325	4032	9251	12	50	0	0	4	2 3 2	86./101.	.69
60	5	16	130	MO	012	1	4010	9355	0	0	0	3	0	0	3	1 0 0	98./ 79.	.00
60	5	19	2320	MO	019	1	3947	9305	0	0	1	12	0	0	3	1 1 1	106./122.	.03
60	6	4	19[illegible]	MO	020	1	4031	9332	0	0	0	5	0	0	4	1 0 0	84./ 96.	.00
60	6	11	161[illegible]	MO	023	1	3917	9359	0	0	0	3	0	0	3	1 0 0	130./100.	.00
60	6	29	1820	MO	024	1	3900	9358	0	0	0	15	0	0	5	1 0 1	136./112.	.01
*60	6	29	1900	MO	025	1	3945	9451	3954	9425	25	30	0	0	4	2 3 2	135./ 51.	1.43
*60	6	29	2000	MO	026	1	4037	9452	4036	9452	1	3	0	0	4	1 1 0	112./ 35.	.01

"*" before year means event ocurred within a 2 degree square centered on centra. point

03665 9379

NPP1-5B0-005
[initials] 3-12/36

Tornadoes within 125 [illegible] of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	P	P	AZRAN	Area sq.mi
60	12	4	2050	MO	034	2	3915	9403	3924	9355	8	5	0	0	4	2	3	2	132./ 99.	.04
60	5	5	1630	NE	002	1	4142	9714	0	0	0	0	0	0	3				318./109.	.00
*60	5	16	230	NE	003	1	4009	9557	0	0	0	0	0	0	4	1			230./ 19.	.00
*60	5	19	1530	NE	008	1	4012	9530	0	0	0	0	0	0	3	1			146./ 11.	.00
*60	6	14	2200	NE	016	1	4014	9541	0	0	1	0	0	0	4	1	1	2	198./ 7.	.00
60	6	15	2000	NE	020	1	4142	9617	0	0	0	0	0	0	4	2			340./ 86.	.00
60	6	27	1700	NE	034	1	4000	9757	0	0	0	0	0	0	5	1	0	0	259./109.	.00
*60	6	29	1900	NE	035	1	4004	9535	0	0	0	44	0	6	3	1	0	2	172./ 17.	.04
61	4	20	1530	IA	001	1	4113	9430	4120	9427	3	30	0	0	4	1	1	2	42./ 77.	.20
61	4	23	837	IA	002	2	4043	9344	4041	9225	34	190	0	2	6	2	4	4	76./ 87.	11.77
*61	5	7	820	KS	019	1	3958	9537	0	0	0	0	0	0	4	2		1	176./ 23.	.00
61	5	7	1500	KS	020	1	3907	9506	0	0	0	0	0	0	0				161./ 78.	.00
61	5	31	2115	KS	023	1	3949	9737	0	0	0	0	0	0	4	2		1	251./ 97.	.00
61	7	20	1730	KS	034	1	3925	9705	0	0	0	0	0	0	1	0		1	230./ 87.	.00
*61	7	23	1935	KS	036	1	3953	9549	0	0	0	0	0	0	0				195./ 29.	.00
*61	10	12	1540	KS	038	1	3941	9535	0	0	0	0	0	0	2	1		1	177./ 40.	.00
61	10	12	1610	KS	039	1	3919	9547	0	0	1	0	0	0	3	2	1	1	186./ 62.	.00
*61	10	12	1630	KS	040	1	3931	9528	0	0	0	0	0	0	0				171./ 51.	.00
*61	10	12	1645	KS	041	1	3921	9535	3923	9532	3	0	0	0	2	0	2	1	178./ 60.	.00
61	10	12	1730	KS	042	1	3916	9523	3918	9518	5	0	0	0	4	1	2	1	173./ 68.	.00
61	10	12	1810	KS	043	1	3857	9545	0	0	1	0	0	0	2	0	1	1	212./ 99.	.00
61	10	12	2006	KS	044	1	3907	9512	0	0	0	0	0	0	0	1			165./ 77.	.00
*61	4	20	1630	MO	014	1	3951	9450	0	0	0	3	0	0	3	0	0	0	129./ 4[illegible].	.00
61	4	22	200	MO	015	1	3845	9413	0	0	0	15	0	0	4	1	0	1	145./[illegible]15.	.01
61	4	23	220	MO	016	1	3843	9359	3844	9351	7	15	0	0	3	1	2	1	[illegible]/125.	.21
61	4	23	1400	MO	017	1	3845	9410	0	0	0	3	0	0	3	1	0	0	144./118.	.00
61	5	7	1745	MO	025	2	3918	9403	3920	9355	4	15	0	2	4	2	2	1	131./ 97.	.13
61	5	7	1820	MO	026	2	3923	9337	3925	9325	5	15	0	0	4	2	2	1	122./110.	.16
61	5	7	1810	MO	027	1	4020	9342	0	0	0	5	0	0	3	1	0	0	91./ 84.	.00
61	7	22	2100	MO	033	1	3950	9409	3851	9405	2	40	0	0	4	2	1	2	142./115.	.16
62	5	7	2130	IA	004	1	4104	9422	0	0	0	75	0	0	4	1	0	3	53./ 72.	.04
62	5	18	1430	IA	005	1	4136	9528	4138	9532	4	15	0	0	5	1	1	1	6./ 75.	.12
62	5	18	1700	IA	006	1	4206	9554	4208	9551	3	60	0	0	4	1	1	3	354./106.	.39
62	5	28	2100	IA	008	1	4110	9312	4118	9303	3	60	0	0	5	2	2	3	66./120.	.41
62	5	18	2110	KS	007	1	3905	9532	0	0	0	0	0	0	2			1	209./ 87.	.00
62	5	27	1545	KS	010	1	3914	9500	0	0	0	0	0	0	3	2			156./ 73.	.00
62	5	24	1815	KS	015	1	3835	9602	0	0	0	0	0	0	3	0		1	190./108.	.00
62	5	25	1900	KS	016	1	3950	9809	0	0	0	0	0	0	3	0		1	235./120.	.00
62	5	26	1915	KS	017	1	3828	9610	0	0	0	0	0	0	3	1		1	193./116.	.00
62	5	26	1925	KS	018	1	3834	9611	0	0	2	60	0	0	3	2	1	3	194./110.	.23
62	5	26	1948	KS	019	1	3858	9542	0	0	2	0	0	4	3	3	1	2	182./ 83.	.00
62	5	27	2030	KS	021	1	3930	9718	3933	9714	2	15	0	0	3	1	1	1	237./ 93.	.07
62	5	27	2059	KS	022	1	3949	9729	0	0	0	0	0	0	3			1	249./ 90.	.00
62	5	28	1600	KS	025	1	3820	9607	3823	9605	1	[illegible]	0	0	5	2	1	3	191./123.	.33
62	5	28	1640	KS	028	1	3850	9554	3856	9547	1	60	0	0	5	2	2	3	188./ 92.	.21
62	5	28	1720	KS	029	1	3918	9532	0	0	0	0	0	0	6	1		1	176./ 63.	.00
*62	5	31	1345	KS	031	1	3942	9536	3948	9536	6	4	0	0	2	2	2	0	179./ 39.	.03
*62	5	31	1345	KS	032	1	3948	9538	0	0	0	0	0	0	0	1		0	180./ 37.	.00
*62	5	31	1345	KS	033	1	3941	9526	0	0	0	0	0	0	0	1		1	167./ 41.	.00
62	7	11	2220	KS	051	1	3902	9523	0	0	0	0	0	0	3	2		1	172./ 80.	.00
*62	8	6	1740	KS	054	1	3931	9547	3923	9540	7	200	0	3	5	4	2	4	185./ 50.	2.93
62	8	6	1740	KS	055	1	3917	9543	0	0	0	0	0	0	5	1		1	183./ 64.	.00
62	8	6	1840	KS	056	1	3911	9534	0	0	0	0	0	0	2	2		0	177./ 70.	.00
62	8	6	1840	KS	057	1	3910	9533	0	0	0	0	0	0	2	2		1	177./ 71.	.00
62	8	5	1840	KS	058	1	3910	9532	0	0	0	0	0	0	2	1		1	176./ 71.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

08665 0380

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Ste	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	P	P	AIRAN	Area sq.mi
62	8	6	1900	KS	059	1	3847	9515	3845	9511	2	0	0	0	5	3	1	1	169./ 96.	.00
62	8	6	1940	KS	060	1	3845	9520	0	0	0	0	0	0	0	1		1	171./ 94.	.00
62	8	6	1940	KS	061	1	3847	9524	0	0	0	0	0	0	0	1		1	173./ 95.	.00
62	5	28	1900	MO	004	1	3921	9435	3922	9432	2	15	0	0	4	1	1	1	141./ 77.	.08
*62	5	31	1345	MO	006	1	3957	9500	0	0	0	3	0	0	1	0	0	0	129./ 38.	.00
*62	5	31	1345	MO	007	1	3958	9459	0	0	0	3	0	0	1	0	0	0	128./ 35.	.00
62	7	15	100	MO	019	1	3916	9350	0	0	1	3	0	0	3	1	1	0	128./106.	.01
*62	7	21	725	MO	020	2	3957	9457	3953	9445	5	30	0	1	4	1	3	2	127./ 60.	.33
62	5	7	1830	NE	002	1	4136	9630	0	0	1	0	0	5	4	2	1	1	353./ 84.	.00
62	6	6	1845	NE	030	1	4104	9746	0	0	0	0	0	0	2	0		1	294./105.	.00
62	6	6	2110	NE	031	1	4058	9711	0	0	0	0	0	0	0	0		1	295./ 79.	.00
62	7	21	2030	NE	039	1	4106	9747	4124	9730	25	264	0	1	5	3	3	4	295./107.	12.70
62	8	4	1550	NE	041	1	4019	9749	0	0	1	120	0	0	3	1	1	3	269./103.	.27
*63	4	18	1700	IA	005	1	4110	9450	0	0	0	60	0	0	4	2		3	36./ 61.	.00
*63	4	18	1710	IA	006	1	4120	9438	4122	9435	0	60	0	0	4	2	0	3	37./ 74.	.09
63	5	12	1515	IA	011	1	4213	9612	4218	9555	15	15	0	0	4	2	3	1	347./115.	.44
63	5	12	1645	IA	012	1	4140	9630	0	0	0	0	0	0	4	1		1	33./ 94.	.00
*63	4	28	1620	KS	002	2	3948	9619	4000	9555	25	30	0	0	2	2	3	2	224./ 66.	1.44
*63	4	28	1645	KS	003	1	3950	9617	0	0	0	0	0	0	0	1			224./ 63.	.00
*63	4	28	1645	KS	004	1	3951	9616	0	0	0	0	0	0	1				224./ 62.	.00
63	5	4	1740	KS	005	1	3826	9526	0	0	0	0	0	0	2	1			175./115.	.00
63	9	4	300	KS	025	1	3904	9520	0	0	0	0	0	0	2	1		1	173./ 75.	.00
*63	4	22	30	MO	005	1	4008	9514	0	0	0	5	0	0	4	1	0	0	124./ 23.	.00
63	5	15	1	MO	010	1	3932	9419	0	0	0	3	0	0	2	1	0	0	123./ 29.	.00
63	5	15	210	MO	012	1	3916	9351	0	0	0	5	0	0	4	1	0	0	124./105.	.00
*63	4	28	1500	NE	001	1	4023	9853	4027	9550	5	90	1	8	4	3	2	3	220./ 62.	.90
63	4	29	1600	NE	002	1	4135	9701	4140	9647	13	90	0	0	4	2	3	3	320./ 97.	3.25
63	4	28	1630	NE	003	1	4049	9732	4050	9729	2	54	0	0	0	1	1	3	288./ 91.	.23
63	4	28	1700	NE	004	1	4005	9708	4006	9704	3	120	0	0	4	2	3	3	257./ 71.	.36
63	4	28	1645	NE	005	1	4044	9708	0	0	1	0	0	0	0	1	1	3	289./ 72.	.03
63	5	14	2200	NE	007	1	4035	9735	0	0	1	15	0	0	3	1	1	1	279./ 80.	.03
63	6	5	2000	NE	011	1	4141	9648	0	0	1	0	0	0	3	1	1	1	327./ 96.	.00
*64	4	12	1645	IA	001	1	4040	9512	4030	9506	13	120	1	28	6	4	3	3	44./ 26.	3.06
*64	4	12	1650	IA	002	1	4054	9533	0	0	2	45	0	0	4	2	3	2	39./ 42.	.37
*64	4	12	1730	IA	003	1	4115	9446	0	0	0	60	0	0	4	3	0	3	37./ 60.	.02
64	4	12	1730	IA	004	1	4055	9429	4101	9420	9	0	0	0	5	2	2	3	37./ 63.	.00
*64	4	20	2140	IA	005	1	4045	9528	4047	9525	3	90	0	0	4	2	1	3	37./ 25.	.19
*64	4	20	2200	IA	006	1	4054	9523	0	0	0	105	0	1	5	2		3	39./ 33.	.00
64	4	20	2230	IA	007	1	4124	9503	4124	9455	6	105	0	1	4	5	2	3	25./ 68.	1.37
64	4	26	1910	IA	008	1	4054	9418	4059	9400	15	90	0	0	4	2	3	3	62./ 70.	2.57
64	5	7	1830	IA	020	1	4150	9433	0	0	2	60	0	0	4	2	1	3	29./107.	.23
*64	6	19	1910	IA	029	1	4043	9521	4050	9511	3	105	0	2	6	3	2	4	30./ 25.	.71
*64	6	19	2021	IA	030	1	4044	9505	4050	9453	5	60	0	1	5	5	2	2	49./ 35.	.38
64	6	22	1830	IA	032	1	4136	9347	4139	9338	10	60	0	0	3	2	2	3	48./112.	1.16
64	6	22	1840	IA	033	1	4044	9345	0	0	1	60	0	0	3	2	1	3	75./ 89.	.11
*64	6	22	1900	IA	034	1	4045	9536	4057	9529	2	120	0	0	5	3	1	3	4./ 24.	.57
*64	6	22	1900	IA	035	1	4042	9527	4046	9514	6	120	0	0	5	4	2	3	22./ 23.	1.39
64	6	22	1900	IA	036	1	4056	9359	4103	9347	13	120	0	0	5	2	3	3	65./ 83.	2.99
64	3	20	2100	IA	042	1	4040	9556	0	0	0	15	0	0	4	0	0	1	78./ 80.	.01
64	8	27	2000	IA	044	1	4136	9502	0	0	1	45	0	0	4	2	0	1	23./ 70.	.03
64	9	3	1100	IA	051	1	4217	9542	0	0	0	0	0	0	5	1		1	359./116.	.00
*64	9	22	1510	IA	054	1	4039	9514	4048	9507	4	90	0	0	5	2	2	3	45./ 26.	.82
64	4	2	1803	KS	002	1	3857	9603	3859	9500	7	0	3	0	0	1	2	2	164./ 87.	.00
64	4	12	1526	KS	004	1	3845	9529	3912	9514	33	264	0	3	6	1	4	4	176./ 96.	16.73
64	4	15	1620	KS	010	1	3852	9605	0	0	0	0	0	0	3	1		1	193./ 91.	.00

"*" before year means event occurred within a 2 degree square centered on central point

NPP1 - SBO - 005
Exh. 3-13/36

0 8 5 5 5   9 3 3 1

NPPI — SBO-005
[illegible] 3-14/36

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	P	P	AZRAN	Area sq.mi
64	4	20	1935	KS	013	1	3927	9705	3916	9657	11	15	0	0	4	2	3	1	231./ 85.	.32
*64	4	20	2145	KS	014	1	3951	9522	0	0	0	0	0	0	4			1	165./ 51.	.00
*64	4	20	2200	KS	015	1	3944	9511	0	0	0	0	0	0	4			1	151./ 42.	.00
64	4	20	2140	KS	016	1	3842	946?	0	0	0	0	0	0	3	2		1	158./107.	.00
64	4	22	1800	KS	027	1	3841	9545	0	0	0	0	0	0	3			1	207./112.	.00
64	4	22	1800	KS	029	1	3845	9639	0	0	0	0	0	0	0			1	205./107.	.00
64	4	22	1830	KS	030	1	3829	9609	0	0	0	0	0	0	3			1	192./115.	.00
64	4	22	1830	KS	033	1	3829	9603	0	0	0	0	0	0	0			1	193./114.	.00
64	4	22	1845	KS	034	1	3843	9544	0	0	0	0	0	0	3			1	185./101.	.00
64	4	22	1900	KS	035	1	3833	9517	0	0	0	0	0	1	3	2		1	171./109.	.00
64	4	22	1900	KS	036	1	3832	9451	0	0	0	0	0	0	0			1	161./115.	.00
64	4	22	1915	KS	037	1	3835	9443	0	0	0	0	0	0	3			1	160./113.	.00
64	4	22	1915	KS	038	1	3845	9451	0	0	0	0	0	0	3	1		1	159./102.	.00
64	4	26	1545	KS	042	1	3820	9459	0	0	0	0	0	0	2	1		1	166./125.	.00
64	4	26	1825	KS	043	1	3834	9519	0	0	0	0	0	0	0			1	172./109.	.00
64	4	26	1930	KS	044	1	3849	9457	0	0	0	0	0	0	0			1	151./ 97.	.00
64	4	26	1940	KS	045	1	3851	9446	0	0	0	0	0	0	0			1	156./ 97.	.00
64	4	26	1950	KS	046	1	3845	9439	0	0	0	0	0	0	0			1	154./105.	.00
64	5	25	1802	KS	059	1	3820	9616	0	0	0	0	0	0	0			1	174./125.	.00
*64	6	11	1200	KS	069	1	3940	9536	0	0	0	0	0	0	0	0		1	178./ 41.	.00
64	6	15	300	KS	072	1	3842	9528	0	0	0	0	0	0	[illegible]			1	202./106.	.03
64	6	18	1810	KS	074	1	3853	9553	0	0	0	0	0	0	[illegible]	0		1	188./ 87.	.00
64	6	21	1910	KS	077	1	3756	9730	0	0	0	0	0	0	[illegible]	0		1	255./ 90.	.00
64	6	21	1910	KS	078	1	3857	9722	3902	9714	9	0	0	[illegible]	4	3	2	1	224./117.	.00
64	6	21	1925	KS	079	1	3857	9711	0	0	0	0	0	0	0	2		1	221./111.	.00
64	6	21	2320	KS	080	1	3923	9517	0	0	0	0	0	0	0	0		1	206./ 65.	.00
64	6	22	1430	KS	081	1	3951	9638	0	0	0	0	0	0	0			1	237./ 55.	.00
*64	6	22	1510	KS	082	1	3938	9549	0	0	0	0	0	0	0	0		1	190./ 44.	.00
*64	8	20	1720	KS	086	1	3952	9532	3954	9529	1	15	0	0	0	1	1	1	171./ 29.	.05
*64	8	20	1730	KS	087	1	3951	9528	0	0	0	9	0	0	0	1		1	166./ 31.	.00
64	4	12	1745	MO	005	1	3940	9425	3945	9422	1	15	0	0	3	1	1	1	125./ 70.	.04
64	4	12	1830	MO	006	4	3942	9424	3934	9407	8	30	1	10	6	3	3	2	150./115.	.47
*64	4	12	2220	MO	008	1	4017	9459	4023	9449	11	24	0	0	6	2	3	2	98./ 30.	.51
64	5	26	1500	MO	010	1	3907	9405	0	0	1	15	0	0	3	1	1	1	136./102.	.04
64	6	11	1430	MO	011	1	3926	9409	0	0	0	3	0	0	3	1	0	0	129./ 85.	.00
*64	6	22	1700	MO	014	1	3945	9451	0	0	1	15	0	0	4	1	1	1	134./ 50.	.03
64	8	20	1930	MO	018	1	3954	9426	0	0	1	3	0	0	3	1	1	0	116./ 61.	.01
64	8	20	2130	MO	019	1	4014	9304	0	0	0	3	0	0	3	1	0	0	95./115.	.00
64	9	22	1730	MO	020	1	4003	9438	0	0	0	3	0	0	3	1	0	0	105./ 71.	.00
64	9	22	1750	MO	021	1	4003	9350	0	0	4	30	0	0	3	1	2	2	102./ 85.	.23
*64	4	23	1900	NE	003	1	4041	9630	4058	9626	9	0	0	0	4	1	2	1	297./ 44.	.00
64	4	25	1630	NE	005	1	4001	9755	4036	9734	22	0	0	0	4	2	3	1	259./107.	.00
64	5	6	530	NE	015	1	4147	9621	0	0	0	0	0	0	4	1	0	1	340./ 92.	.00
64	5	6	400	NE	016	1	4119	9648	4121	9645	3	0	0	0	4	2	1	1	318./ 78.	.00
64	5	25	1900	NE	018	1	4118	9642	4118	9637	4	264	0	0	4	1	2	4	320./ 73.	2.16
64	5	25	2100	NE	020	1	4053	9713	4046	9705	8	18	0	0	5	2	2	2	292./ 78.	.29
64	5	25	2110	NE	021	1	4116	9706	0	0	0	0	0	0	0	0		1	310./ 86.	.00
64	6	8	1745	NE	022	1	4009	9753	4018	9741	14	0	0	0	5	1	3	1	263./104.	.00
64	6	8	[illegible]900	NE	023	1	4024	9655	4030	9643	12	0	0	0	4	2	3	1	273./ 59.	.00
64	6	11	[illegible]	NE	02[illegible]	1	4036	9751	0	0	0	0	0	0	0	1		1	278./102.	.00
64	6	11	[illegible]	NE	026	1	4052	9735	0	0	0	0	0	0	0	0		1	289./ 94.	.00
64	6	11	1900	NE	027	1	4054	9706	0	0	0	0	0	0	0	0		1	296./ 74.	.00
64	6	11	1900	NE	028	1	4037	9659	0	0	0	0	0	0	0	1		1	295./ 65.	.00
64	6	11	1900	NE	029	1	4025	9744	0	0	0	0	0	0	0	1		1	272./ 96.	.00
64	6	11	1900	NE	030	1	4013	9741	0	0	0	0	0	0	0			1	268./ 94.	.00

"*" before year means [illegible] ocurred within a 2 degree square centered on central point

08665 A382

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's Ft	Deaths	Injuries	Damage Class	F	P	P	AZMAN	Area sq.mi
65	5	24	2010	IA	016	1	4123	9344	0	0	0	0	0	0	0	1	0		54./106.	.00
65	5	25	2140	IA	017	1	4124	9502	0	0	0	50	0	0	4	2	1		23./ 69.	.00
*65	7	8	2130	IA	029	1	4032	9542	0	0	0	0	0	0	3	2	2		344./ 11.	.00
65	9	7	100	IA	039	1	4202	9510	0	0	1	30	0	0	4	2	1	2	32./103.	.06
65	9	9	1230	IA	040	1	4202	9556	0	0	1	30	0	0	4	1	1	2	372./102.	.06
65	9	9	1300	IA	041	1	4203	9554	4207	9545	10	30	0	0	5	2	3	2	353./103.	.59
65	9	20	1830	IA	044	1	4103	9346	4105	9341	0	45	0	0	5	2	0	2	64./ 94.	.07
65	5	25	1900	KS	036	1	3927	9703	0	0	0	0	0	0	4			1	232./ 88.	.00
65	6	6	1930	KS	048	1	3831	9532	3841	9515	5	80	0	0	4	1	2	3	182./110.	.61
65	6	21	1500	KS	052	1	3916	9633	0	0	0	0	0	0	4	2		1	213./ 78.	.00
65	6	27	1605	KS	053	1	3914	9630	0	0	0	0	0	0	4	1		1	211./ 78.	.00
65	7	9	1500	KS	056	1	3852	9450	0	0	0	0	0	0	5	1		1	151./ 97.	.03
65	8	27	330	KS	061	1	3905	9445	0	0	0	0	0	0	0	0		1	150./ 95.	.00
*65	9	13	1320	KS	064	1	3935	9509	0	0	0	0	0	0	4	1			111./ 51.	.00
*65	9	20	1400	KS	065	1	3949	9510	0	0	0	0	0	0	4				147./ 59.	.00
65	9	20	2145	KS	069	1	3843	9506	0	0	0	0	0	0	5				166./101.	.00
*65	4	10	1330	MO	007	1	3929	9502	0	0	2	30	0	0	1	0	1	3	152./ 59.	.11
65	4	10	1515	MO	009	1	3947	9425	3952	9418	9	55	0	0	7	5	2	2	121./ 65.	.28
65	4	10	1645	MO	010	1	4005	9342	4011	9333	10	30	0	0	1	5	2	3	100./ 90.	.60
65	4	10	1710	MO	011	2	3957	9347	4003	9336	11	55	0	0	1	4	2	3	106./ 89.	.34
65	4	10	1930	MO	012	1	3859	9407	0	0	0	15	0	0	4	1	0	1	145./124.	.01
65	5	26	210	MO	014	1	3845	9420	3849	9409	1	55	0	0	4	1	1	1	147./115.	.03
65	5	26	215	MO	015	1	3858	9421	3901	9417	4	150	0	0	5	2	2	3	144./102.	1.27
65	5	26	300	MO	016	1	3920	9332	0	0	0	3	0	0	2	0	0	0	122./135.	.00
65	6	4	1520	MO	017	1	3836	9421	0	0	0	3	0	0	2	0	0	0	150./121.	.00
65	9	18	1700	MO	021	1	4016	9431	0	0	1	6	0	0	1	0	1	0	94./ 74.	.01
65	9	20	1800	MO	022	1	4015	9406	0	0	0	3	0	0	3	1	0	0	95./ 72.	.00
65	9	20	1930	MO	023	1	3905	9534	3912	9525	13	30	0	0	3	2	3	2	129./124.	.74
65	9	20	2230	MO	025	1	3854	9423	0	0	1	9	0	0	5	2	1	1	146./105.	.03
65	9	20	2300	MO	026	1	3933	9330	0	0	2	15	0	0	4	1	1	1	116./110.	.06
65	5	8	1640	NE	004	1	4010	9734	4043	9719	20	0	0	0	0	3	3	1	243./ 89.	.03
*65	5	8	1700	NE	008	1	4049	9626	0	0	0	0	0	0	0	1		1	308./ 46.	.00
65	5	8	1730	NE	011	1	4053	9756	0	0	0	0	0	0	0	1	1	1	287./103.	.00
65	5	8	1735	NE	012	1	4056	9813	4102	9809	7	0	0	0	0	1	2	1	257./122.	.00
65	5	8	1800	NE	014	1	4125	9721	4144	9709	12	0	0	0	0	2	3	1	310./100.	.00
65	5	14	2140	NE	017	1	4054	9812	0	0	0	0	0	0	0	1		1	286./121.	.00
65	5	15	1100	NE	018	1	4119	9732	0	0	0	0	0	0	0	0		1	304./103.	.00
65	5	15	1102	NE	019	1	4120	9658	0	0	0	0	0	0	0	0	0	1	314./ 84.	.00
65	5	25	1255	NE	026	1	4053	9740	0	0	0	0	0	0	0	0	0	1	269./ 99.	.00
65	5	25	1725	NE	029	1	4007	9740	0	0	0	0	0	0	0				259./ 72.	.00
65	5	25	2015	NE	032	1	4104	9753	0	0	0	0	0	0	0				293./111.	.00
65	6	25	1714	NE	039	1	4011	9811	0	0	0	0	0	0	0			1	265./117.	.00
*65	7	1	1700	NE	041	1	4043	9625	4039	9611	13	0	0	0	1	5	3	3	302./ 42.	.00
*65	7	1	1715	NE	042	1	4046	9625	0	0	2	0	0	0	0	5	1	1	335./ 44.	.00
*65	7	1	1815	NE	043	1	4040	9551	4044	9536	13	0	0	0	0	5	1	3	335./ 21.	.00
66	5	17	100	IA	006	1	4142	9416	0	0	2	120	0	0	4	2	1	3	37./102.	.45
66	5	23	630	IA	007	1	4050	9420	0	0	0	15	0	0	1	1	0	1	64./ 66.	.01
66	5	23	1745	IA	013	1	4134	9333	4140	9321	3	45	0	0	4	2	2	2	52./113.	.32
66	7	26	1515	IA	024	1	4133	9405	0	0	0	0	0	0	0				44./100.	.00
66	10	14	1215	IA	028	1	4047	9435	0	0	1	30	0	0	4	2	1	2	61./ 54.	.09
*66	10	14	1430	IA	031	1	4050	9438	0	0	0	0	0	0	0	2			57./ 54.	.00
66	10	14	1515	IA	033	1	4048	9420	0	0	0	0	0	0	3				65./ 65.	.00
66	10	14	1600	IA	035	1	4136	9343	4144	9336	2	35	0	0	6	2	1	1	45./111.	.08
66	4	19	1525	KS	001	1	3855	9448	3858	9440	3	45	0	0	4	0	3	2	156./ 94.	.34
66	5	11	1345	KS	002	1	3939	9712	3941	9706	2	30	0	0	5	3	1	2	240./ 84.	.15

'*' before year means event occurred within a 2 degree square centered on central point

8665 -9383

NPPD - 580 - 005
[illegible] 3-16/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
*65	5	11	1345	KS	003	1	3934	9632	0	0	0	0	0	0	0		222./ 63.	.03
66	5	11	1415	KS	004	1	3937	9640	3940	9623	7	0	0	0	0	2 1	229./ 64.	.00
66	5	11	1415	KS	007	1	3910	9548	3912	9537	2	198	0	0	4	? 4	185./ 77.	.76
66	5	15	1740	KS	L09	1	3909	9441	0	0	2	0	0	5	4	2 1	149./ 86.	.00
66	6	8	1737	KS	019	1	3908	9709	3913	9701	4	30	0	0	4	2 ? ?	224./ 72.	.26
66	6	8	1800	KS	020	1	3904	9646	3916	9646	8	198	0	50	6	3 2 ?	214./ 93.	3.11
66	6	8	1900	KS	021	1	3855	9555	3935	9535	21	264	16	450	8	3 3 4	187./ 97.	17.61
66	6	8	2000	KS	022	1	3910	9511	3916	9450	15	60	1	2	5	4 3 5	144./ 74.	1.81
66	6	8	1915	KS	023	1	3914	9502	3916	9453	8	0	0	0	4	2 2 2	137./ 73.	.00
66	6	12	1631	KS	024	1	3903	9527	0	0	0	0	0	0	0	1 1	174./ 79.	.00
66	8	20	1628	KS	033	1	3916	9730	0	0	.	0	0	0	3	0 0 1	242./ 97.	.00
66	9	2	1630	KS	034	1	3912	9742	0	0	1	5	0	0	0	0 0 0	234./118.	.01
66	9	15	1545	LA	012	1	3933	9258	0	0	0	15	0	0	2	0 0 1	101./125.	.00
66	4	17	1600	MO	002	1	3953	9406	0	0	2	6	0	0	4	1 1 1	112./ 76.	.03
66	4	19	1630	MO	003	1	3956	9324	0	0	2	6	0	0	3	1 0 1	104./109.	.02
[illegible]	4	29	1830	MO	005	1	4027	9535	0	0	2	9	0	0	3	1 1 1	77./ 27.	.01
66	5	11	1800	MO	036	1	3913	9354	0	0	0	3	0	0	7	1 0 0	131./101.	.03
*66	5	2?	600	MO	014	1	4027	9513	4028	9506	6	15	0	0	4	2 2 1	72./ 23.	.18
66	6	5	1500	MO	018	1	4014	9417	0	0	0	5	0	0	3	1 0 0	76./ 62.	.00
66	6	12	1545	MO	020	1	3918	9431	0	0	0	3	0	0	1	0 0 0	141./ 82.	.00
66	5	22	1730	NE	003	1	4045	9748	4111	9713	13	0	0	0	0	1 3 1	234./102.	.00
66	5	22	1900	NE	004	1	4150	9628	0	0	0	0	0	0	0	1	337./ 96.	.02
66	5	22	1948	NE	005	1	4107	9649	4110	9636	10	0	0	1	0	2 3 1	311./ 70.	.00
*67	6	7	1700	IA	036	1	4033	9503	0	0	2	60	0	0	3	1 1 ?	57./ 32.	.23
67	6	9	2130	IA	041	1	4235	9542	4207	9536	3	90	0	0	4	1 2 ?	335./104.	.96
67	6	9	2300	IA	043	1	4103	9347	4108	9340	3	90	0	0	5	2 1 3	63./ 94.	.57
67	6	9	2330	IA	044	1	4102	9319	0	0	2	120	0	0	4	2 1 3	67./113.	.45
67	6	20	2300	IA	051	1	4142	9542	0	0	0	0	0	0	4		358./ 81.	.00
67	7	30	1950	IA	053	1	4138	9334	0	0	0	0	0	0	0		50./120.	.00
*67	6	7	1525	KS	005	1	3946	9541	0	0	0	0	0	0	0		184./ 35.	.00
67	6	11	1725	KS	014	1	3906	9600	3925	9547	14	0	0	0	5	1 3 1	173./ 77.	.00
67	6	11	1800	KS	015	2	3910	9540	3945	9520	44	0	0	0	5	3 4 2	181./ 71.	.03
67	9	23	1655	KS	026	1	3954	9742	0	0	3	0	0	0	3	1 1 1	254./ 92.	.00
*67	1	24	1150	MO	001	1	3936	9456	3941	9453	6	30	0	0	5	2 2	144./ 55.	.36
67	1	24	1235	MO	002	1	3927	9414	0	0	2	15	0	0	4	2 1 1	130./ 84.	.07
67	1	24	1213	MO	003	2	[illegible]06	941?	3915	9403	13	60	2	18	6	3 3 3	137./ 92.	1.32
67	1	24	1250	MO	004	1	3933	9403	0	0	2	30	0	0	4	0 1 0	123./ 89.	.11
67	1	24	1400	MO	005	1	3953	9329	0	0	0	3	0	0	1	0 0 0	105./103.	.00
67	1	24	1420	MO	006	1	4016	930?	4022	9257	3	15	0	0	4	1 2 1	92./120.	.11
67	4	16	1945	MO	013	1	3830	9434	0	0	0	3	0	0	.	0 0 0	156./122.	.00
67	4	16	1745	MO	014	1	3846	9430	0	0	0	3	0	0	1	0 0 0	151./107.	.00
67	4	21	1230	MO	016	1	3937	9435	0	0	0	3	0	C	1	1 0 1	132./ 65.	.00
67	4	21	1300	MO	017	1	3944	9414	0	0	0	15	0	0	3	1 0 1	120./ 74.	.00
67	4	21	1300	MO	018	1	4001	9406	4004	9357	8	27	0	0	4	2 2 2	105./ 73.	.44
67	4	21	1315	MO	019	1	3955	9353	0	0	0	3	0	0	1	0 0 0	103./ 83.	.09
67	4	21	1320	MO	020	1	3928	9346	3936	9333	14	132	0	0	5	3 3 3	122./101.	?.67
67	4	21	1410	MO	021	2	4007	9325	4007	931?	1	15	0	7	4	2 2 1	58./103.	.05
67	4	21	1410	MO	022	1	3939	9316	3941	9311	3	60	0	0	5	2 1 3	111./117.	.36
67	4	21	1420	MO	023	1	3942	9310	3959	9207	53	150	C	2	5	4 3 4	109./120.	15.07
67	4	21	1503	MO	025	1	3906	9339	0	P	0	3	0	0	1	0 0 0	127./117.	.00
*67	5	18	1855	MO	035	1	4026	9523	0		0	3	0	0	3	0 0 0	66./ 12.	.00
*67	5	27	1630	MO	036	1	4024	9539	4026	9'	.	15	0	0	3	1 1 1	82./ ?2.	.07
67	6	7	1900	MO	038	1	3924	9436	3926	9432	0	15	0	0	4	1 0 1	140./ ?4.	.01
*67	6	9	2145	MO	039	1	4015	9505	0	0	0	3	0	0	2	0 0 0	103./ 26.	.09
67	6	10	1100	MO	041	1	3901	933?	0	0	0	5	0	0	1	0 0 0	130./125.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

08<65 0384

NPP1-SBO-005
ERL 3-17/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	WZRAN	Area sq-mi
67	6	12	15	MO	043	1	3911	9429	0	0	1	15	0	0	4	1 1 1	143./ 88.	.01
67	6	12	100	MO	044	1	4016	9402	0	0	0	15	0	0	3	1 0 1	96./ 73.	.00
67	8	18	1730	MO	054	1	3844	9421	3839	9417	1	15	0	0	2	1 1 [illegible]	148./114.	.04
*67	3	30	1845	NE	001	1	4119	9620	0	0	0	0	0	0	1	1	331./ 66.	.00
67	5	10	1845	NE	002	1	4032	9648	0	0	0	0	0	0	5	1	282./ 74.	.00
67	6	7	1715	NE	007	1	4007	9636	[illegible]	9510	4	0	0	0	3	2 2 1	237./ [illegible]	.00
67	6	9	1915	NE	008	2	4018	9734	[illegible]	9649	14	0	0	2	3	2 3 2	268./ 89.	.00
*67	6	9	1938	NE	009	1	4035	9623	[illegible]	9611	11	0	0	0	4	2 3 2	292./ 37.	.00
67	6	11	1535	NE	011	1	4005	9817	0	0	0	0	0	0	0	1	263./123.	.00
67	6	11	1600	NE	012	1	4004	9816	0	0	0	0	0	0	[illegible]	1	262./17[illegible]	.00
67	5	13	1840	NE	017	1	4135	9744	0	0	1	0	0	0	0	1 1 1	308./1[illegible]	.00
67	6	13	2000	NE	023	1	4156	9628	0	0	0	0	0	0	0	0 1	339./102.	.00
67	6	13	2100	NE	024	1	4203	9705	0	0	0	0	0	0	0	0 1	328./121.	.00
67	6	13	2245	NE	025	1	4043	9310	4100	9755	18	0	0	0	0	2 3 1	283./119.	.00
67	6	14	130	NE	026	1	4207	9529	0	0	0	0	0	0	3	2 0 1	343./114.	.00
67	6	15	1630	NE	036	1	4050	9715	4144	9613	80	0	0	0	3	0 4 1	292./ 78.	.00
67	8	1	1500	NE	038	1	4139	9650	0	0	2	0	0	0	4	2 1 1	331./112.	.00
67	9	20	1710	NE	039	1	4003	9747	0	0	0	0	0	0	0	1	238./101.	.00
*68	4	15	1800	IA	006	1	4043	9337	0	0	2	60	0	0	4	2 1 3	21./ 24.	.23
*68	4	16	1800	IA	007	1	4040	9530	0	0	0	0	0	0	3	2 0 1	15./ 20.	.00
68	5	15	1645	IA	013	1	4143	9436	0	0	2	75	0	1	4	1 1 3	21./ 89.	.28
68	6	24	1835	IA	021	1	4142	9600	0	0	0	0	0	0	0		349./ 83.	.00
68	6	24	1935	IA	022	1	4136	9548	0	0	0	0	0	0	0		354./ 75.	.00
68	4	16	1900	KS	001	1	3904	9610	3924	9535	30	0	0	0	4	2 3 1	198./ 81.	.00
68	5	2	1950	KS	005	1	3912	9642	0	0	0	5	0	0	0	0 1	218./ 85.	.00
*68	4	16	1805	MO	005	1	4034	9534	0	0	0	3	0	0	4	1 0 0	19./ 14.	.00
*68	4	16	1816	MO	006	1	4029	9536	0	0	1	10	0	0	4	1 1 1	11./ 5.	.02
*68	5	15	1620	MO	009	1	4021	9452	0	0	0	5	0	0	4	1 0 0	90./ 35.	.00
68	5	15	1530	MO	011	1	3850	9403	3853	9338	5	60	0	2	5	2 2 3	141./117.	.35
68	5	15	1545	MO	012	1	3917	9402	3920	9400	3	15	0	0	4	1 2 1	131./ 98.	.11
68	5	15	1600	MO	013	3	3853	9346	3930	9333	7	15	0	0	4	2 3 1	135./126.	.20
68	5	15	1600	MO	014	1	3903	9331	3906	9329	1	15	0	0	4	1 1 1	1[illegible]./125.	.04
*68	4	15	1825	NE	001	1	4011	9605	0	0	0	0	0	0	4	2 1	244./ 25.	.00
*68	4	16	1810	NE	002	1	4023	9550	0	0	1	0	0	0	4	2 1 1	282./ 9.	.00
*68	6	24	1840	NE	011	1	4121	9620	0	0	0	0	0	0	3	0	332./ 68.	.00
68	6	24	215	NE	012	1	4132	9624	0	0	0	0	0	0	0	1 1	334./ 79.	.00
68	7	8	1600	NE	014	1	4153	9643	0	0	1	18	0	0	0	1 2	332./104.	.04
68	7	30	1540	NE	018	1	4156	9726	0	0	0	0	0	0	0		320./124.	.00
68	7	30	1725	NE	019	1	4110	9739	4107	9732	6	60	0	2	5	2 2 3	205./103.	.79
68	7	30	1400	NE	020	1	4050	9735	4050	9732	2	0	0	0	4	2 1	288./ 93.	.00
*68	8	13	1745	NE	021	1	4115	9557	4113	9532	21	0	0	0	6	3 3 2	345./ 56.	.00
69	6	4	1445	IA	003	1	4124	9526	0	0	1	60	0	0	4	1 3	8./ 64.	.11
69	6	22	1540	IA	007	1	4122	9334	0	0	0	0	0	0	4		37./111.	.00
69	6	22	1535	IA	008	1	4124	9336	0	0	0	0	0	0	0		55./111.	.00
69	6	28	1100	IA	016	1	4200	9512	4203	9508	4	60	0	0	5	2 2 3	11./101.	.55
69	7	16	1815	IA	020	1	4209	9428	4209	9424	3	60	0	0	5	1 [illegible] 3	26./120.	.39
69	7	16	2334	IA	022	1	4131	9330	0	0	0	0	0	0	4		54./119.	.00
69	7	26	1347	IA	023	1	4220	9536	4202	9525	9	60	0	0	5	3 2 3	1./119.	1.03
69	7	26	1630	IA	024	1	4207	9519	4205	9506	11	0	0	0	5	2 3 2	8./107.	.00
69	9	26	1930	IA	028	1	4205	9426	0	0	1	60	0	0	4	1 1 3	27./117.	.11
69	5	5	1835	KS	002	1	3813	9529	0	0	2	0	0	0	3	1 1 1	177./123.	.00
69	5	7	1300	KS	003	1	3904	9518	0	0	0	6	0	0	[illegible]	0 0 1	169./ 79.	.00
69	6	17	1600	KS	008	1	3940	9636	3842	9629	3	11	0	6	5	2 1 1	204./111.	.07
*69	6	26	1345	KS	012	1	3936	9697	0	0	0	0	0	0	3	1 0 1	214./ 54.	.00
69	7	9	1530	KS	015	1	3909	9644	0	0	0	0	0	0	0	0 1	215./ 87.	.00

"*" before year means event occurred within a 2 degree square centered on central point

0 8 6 6 5 0 3 8 5

NPP1-5B0-005
[handwritten initials] 3-19/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
69	7	9	1700	KS	016	2	3857	9506	3859	9458	7	0	0	5	5	2 2	164./ 89.	.00
69	4	4	1615	MO	002	1	3836	9422	0	0	0	3	0	0	1	0 0 0	131./121.	.00
69	4	4	1720	MO	003	1	3543	9359	0	0	0	45	0	1	3	2 0 2	142./125.	.01
69	4	26	1810	MO	005	1	3855	9422	0	0	0	15	0	0	4	1 0 1	145./104.	.01
69	6	22	100	MO	007	1	3911	9436	0	0	0	15	0	0	4	1 0 1	146./ 85.	.01
69	6	25	1830	MO	013	2	3911	9438	3918	9429	5	30	0	5	4	3 3 2	146./ 84.	.32
69	6	26	1835	MO	014	1	3914	9442	0	0	0	30	0	0	3	2 0 2	147./ 80.	.03
69	6	25	1900	MO	015	1	3917	9417	3919	9410	6	30	0	0	4	1 2 2	136./ 90.	.38
69	6	25	1900	MO	016	1	3925	9413	0	0	0	5	0	0	4	1 0 0	130./ 94.	.00
*69	6	27	1850	MO	017	1	4018	9449	0	0	0	3	0	0	1	0 0 0	95./ 37.	.00
69	6	29	1757	MO	018	1	4015	9437	4017	9431	5	30	0	0	3	2 2 2	97./ 47.	.33
69	7	7	1630	MO	019	1	3932	9434	0	0	0	5	0	0	2	1 0 0	145./ 87.	.00
*69	7	25	1424	MO	020	1	3947	9449	0	0	0	6	0	0	3	2 0 1	132./ 51.	.00
69	5	31	1605	NE	003	1	4023	9644	0	0	0	0	0	0	0	0 1	272./ 30.	.00
69	6	22	300	NE	006	1	4127	9746	0	0	0	0	0	0	4	1 1	305./116.	.00
69	5	22	530	NE	007	1	4142	9720	0	0	0	0	0	0	0	1 1	317./111.	.00
69	7	15	1615	NE	014	1	4111	9725	4113	9733	3	0	0	0	3	0 2 1	302./ 95.	.00
69	7	15	1645	NE	015	1	4111	9725	0	0	0	0	0	0	0	0 1	302./ 95.	.00
69	7	16	1650	NE	016	1	4124	9715	0	0	0	0	0	0	0	1 1	311./ 95.	.00
69	8	6	1940	NE	020	1	4129	9735	0	0	0	0	0	0	0	1	308./111.	.00
70	5	12	1930	IA	006	1	4123	9514	4126	9507	1	120	0	0	5	2 1 3	15./ 69.	.29
70	5	22	1800	IA	009	1	4131	9430	0	0	0	0	0	0	3		36./ 87.	.00
70	6	19	2130	KS	024	1	3942	9711	0	0	0	0	0	0	0		241./ 82.	.00
70	11	5	1745	KS	029	1	3935	9538	0	0	1	90	0	0	4	2 1 3	180./ 76.	.17
70	6	12	1335	MO	015	1	3917	9310	0	0	0	3	0	0	1	0 0 0	173./118.	.00
70	6	12	1340	MO	017	1	3923	9333	392	9330	2	15	0	0	2	1 1 1	119./110.	.05
70	6	12	1400	MO	018	1	3923	9315	0	0	0	3	0	0	1	0 0 0	118./125.	.00
70	9	2	1603	MO	033	1	3840	9404	0	0	0	9	0	0	2	0 0 1	144./125.	.01
70	9	7	1730	MO	035	1	4005	9346	0	0	0	6	0	0	4	1 0 1	98./110.	.00
70	6	10	1640	NE	002	1	4117	9657	0	0	0	0	0	0	4	2 1	313./ 82.	.00
70	6	15	2225	NE	007	1	4126	9657	4133	9605	34	180	0	0	0	2 4 4	318./ 55.	11.72
*70	6	15	2235	NE	009	1	4010	9610	0	0	0	0	0	0	0	1 1	246./ 27.	.00
70	7	14	1830	NE	011	1	4029	9653	4010	9647	5	0	0	0	4	2 2 1	278./ 58.	.00
71	5	5	1715	IA	001	1	4049	9421	0	0	1	60	0	0	4	2 1 3	64./ 65.	.11
*71	5	5	1720	IA	002	1	4045	9438	0	0	2	120	0	12	5	1 1 3	62./ 51.	.45
*71	5	5	1800	IA	003	1	4047	9454	0	0	0	0	0	1	4	2	52./ 42.	.00
*71	5	5	230	IA	004	1	4103	9447	0	0	1	30	0	0	2	1 2	42./ 57.	.06
*71	5	23	1428	IA	012	1	4045	9520	0	0	0	0	0	0	2	0 2	30./ 25.	.00
*71	5	23	1640	IA	013	1	4044	9456	0	0	0	0	0	0	4	1 2	54./ 37.	.00
71	5	23	1730	IA	014	1	4052	9436	0	0	0	0	0	0	1	1 2	57./ 56.	.00
71	6	6	2100	IA	023	1	4206	9533	0	0	2	30	0	0	4	1 1 2	14./109.	.11
71	6	6	2122	IA	024	1	4219	9617	0	0	1	30	0	3	4	0 1 2	346./121.	.06
71	5	17	2305	KS	010	1	3915	9719	0	0	1	0	0	0	3	1 1 0	230./102.	.00
71	5	21	1340	KS	012	1	3844	9649	0	0	2	140	0	0	0	1 1 3	210./112.	.53
71	5	31	1900	KS	017	1	3849	9439	0	0	0	30	0	0	3	1 0 2	154./104.	.03
71	6	6	2015	KS	023	1	3849	9537	0	0	2	60	0	0	5	3 1 3	206./104.	.23
71	6	6	2125	KS	024	1	3853	9553	0	0	0	0	0	0	0	1 0 0	185./ 89.	.00
71	6	9	2030	KS	026	1	3932	9738	0	0	0	60	0	0	0	1 0 3	230./122.	.02
71	7	9	1415	KS	033	1	3828	9616	3831	9612	4	0	0	0	0	2 2 2	195./117.	.00
71	5	31	1935	MO	013	1	3900	9417	0	0	0	5	0	0	0	1 0 0	142./103.	.00
71	6	22	1800	MO	019	1	3946	9331	0	0	0	15	0	0	4	1 0 1	110./104.	.01
71	7	23	1812	MO	023	1	3915	9358	0	0	0	3	0	0	0	0 0 0	130./101.	.00
71	8	3	1300	MO	024	1	3919	9348	0	0	0	1	0	0	0	0 0 0	127./106.	.00
71	11	1	1730	MO	026	1	3941	9414	0	0	1	6	0	0	4	1 1 1	122./ 76.	.02
71	5	5	1415	NE	002	1	4105	9755	4110	9747	9	15	0	0	3	0 2 1	293./112.	.26

"*" before year means event occurred within a 2 degree square centered on central point

03665 0336

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	P	P	AZRAN	Area sq.mi
*71	5	23	1515	NE	006	1	4114	9637	4126	9630	15	21	0	0	0	1	3	2	320./ 67.	.60
*71	5	30	2230	NE	019	1	4016	9606	0	0	0	0	0	0	0	0		1	257./ 22.	.00
71	6	4	1515	NE	021	1	4049	9755	4054	9752	6	0	0	0	4	0	2	1	285./107.	.00
71	6	4	1611	NE	022	1	4105	9736	0	0	0	0	0	0	0	0		1	236./ 99.	.00
71	6	4	2030	NE	025	1	4047	9748	4116	9709	47	0	0	0	5	1	4	1	285./102.	.00
71	6	6	1700	NE	029	1	4142	9741	0	0	0	0	0	0	3	0		1	311./122.	.00
71	6	6	1730	NE	030	1	4105	9702	0	0	0	0	0	0	3	0		1	305./ 77.	.00
71	6	6	2000	NE	031	1	4048	9641	0	0	0	0	0	0	3	0		1	300./ 55.	.00
71	6	6	2000	NE	032	1	4048	9641	0	0	0	0	0	0	3	0		1	300./ 55.	.00
71	6	6	2030	NE	033	1	4016	9645	0	0	0	0	0	0	3	0		1	264./ 51.	.00
*71	6	6	2130	NE	034	1	4115	9558	0	0	0	0	0	0	3	0		1	344./ 56.	.00
*71	6	6	2130	NE	035	1	4109	9554	0	0	0	0	0	0	3	0		1	346./ 47.	.00
71	6	13	1630	NE	039	1	4101	9801	0	0	0	0	0	0	0	0		1	290./115.	.00
71	6	13	1730	NE	040	1	4103	9711	0	0	0	0	0	0	0	0		1	301./ 82.	.00
72	6	7	1125	IA	004	1	4209	9459	0	0	2	60	0	0	3	2	1	3	15./112.	.23
72	6	7	1130	IA	005	1	4204	9452	0	0	1	60	0	0	4	2	1	3	18./109.	.11
*72	6	13	1345	IA	006	1	4052	9550	0	0	1	30	0	0	4	1	1	2	344./ 32.	.05
*72	6	13	1530	IA	007	1	4045	9450	0	0	0	30	0	0	3	1	0	2	57./ 44.	.03
72	6	13	1640	IA	008	1	4107	9403	0	0	2	30	0	0	4	2	1	2	57./ 85.	.11
72	7	6	1610	IA	011	1	4224	9542	4227	9538	4	45	0	0	5	1	2	2	359./123.	.41
72	7	6	1613	IA	012	1	4213	9546	0	0	1	30	0	0	4	1	1	2	357./117.	.06
72	7	14	1827	IA	013	1	4036	9413	0	0	1	30	0	0	4	1	1	2	77./ 65.	.06
72	9	10	1955	IA	018	1	4134	9511	4135	9506	6	50	0	0	4	1	2	2	15./ 76.	.38
72	9	12	1530	IA	019	1	4130	9542	4135	9539	6	30	0	0	4	2	2	2	359./ 69.	.35
72	9	12	1800	IA	020	1	4103	9425	0	0	0	30	0	0	4	0	0	2	51./ 67.	.01
72	9	12	1819	IA	021	1	4510	9411	4120	9352	20	60	0	0	4	1	3	3	53./ 82.	2.29
72	4	30	2115	KS	011	1	3855	9714	0	0	1	90	0	6	5	3	0	3	221./114.	.28
72	4	30	2216	KS	012	1	3945	9445	0	0	0	70	0	0	5	2		3	337./104.	.00
72	5	26	1425	KS	030	1	3931	9753	0	0	0	3	0	0	2	0	0	0	244./115.	.00
72	6	24	1645	KS	031	1	3936	9753	0	0	0	4	0	0	3	0	0	0	247./113.	.00
72	7	2	1710	KS	032	1	3849	9535	0	0	0	10	0	0	0	1	0	1	188./ 94.	.01
72	8	22	15	KS	040	1	3901	9451	0	0	0	5	0	0	4	1	0	0	155./ 88.	.00
*72	12	30	130	MO	010	1	3953	9445	0	0	2	15	0	0	4	1	1	1	125./ 49.	.06
*72	5	23	1330	NE	004	1	4041	9553	0	0	0	0	0	0	0	0	0	0	330./ 23.	.00
*72	5	23	1345	NE	005	1	4040	9602	0	0	0	0	0	0	0	0	0	0	316./ 26.	.00
72	5	23	1553	NE	006	1	4047	9809	0	0	0	0	0	0	0	0	0	0	290./116.	.00
72	5	23	1645	NE	007	1	4041	9830	0	0	0	0	0	0	0	0	0	0	284./111.	.00
72	5	23	1650	NE	008	1	4127	9711	0	0	0	0	0	0	0	0	0	0	313./ 96.	.00
72	5	23	1722	NE	011	1	4121	9710	0	0	0	0	0	0	0	0	0	0	311./ 91.	.00
72	5	23	1750	NE	012	1	4019	9547	0	0	0	0	0	0	0	0	0	0	267./ 53.	.00
72	5	23	1812	NE	013	1	4114	9719	0	0	0	0	0	0	0	0	0	0	305./ 91.	.00
*72	5	27	1412	NE	014	1	4052	9632	0	0	0	3	0	0	0	0	0	0	307./ 51.	.00
72	5	27	1535	NE	015	1	4137	9640	0	0	0	0	0	0	0	0	0	0	329./ 89.	.00
*72	6	7	1616	NE	016	1	4119	9554	0	0	0	3	0	0	0	0	0	0	348./ 59.	.00
72	6	16	1248	NE	017	1	4046	9743	0	0	0	0	0	0	0	0		0	285./ 95.	.00
72	6	18	1703	NE	018	1	4049	9913	0	0	0	6	0	0	3	1	0	1	253./122.	.00
72	6	18	1925	NE	019	1	4041	9906	0	0	0	3	0	0	0	0	0	0	280./114.	.00
72	7	1	1710	NE	020	1	4149	9737	0	0	0	5	0	0	0	0	0	0	315./125.	.00
73	4	19	1700	IA	002	1	4212	9519	0	0	1	90	0	0	4	1	1	3	8./112.	.17
73	4	19	1815	IA	003	1	4046	9406	4048	9403	3	90	0	0	4	1	1	3	70./ 74.	.39
73	4	19	1820	IA	004	1	4103	9421	0	0	1	60	0	0	4	1	1	3	54./ 72.	.11
73	4	19	2000	IA	005	1	4106	9350	0	0	2	120	0	0	4	2	1	3	61./ 93.	.45
73	6	16	1745	IA	016	1	4105	9336	0	0	1	15	0	0	4	0	1	1	60./ 59.	.01
73	9	25	2359	IA	026	1	4133	9520	0	0	0	0	0	0	4	2		1	11./ 73.	.00
73	3	13	1820	KS	008	1	3853	9449	3857	9449	4	10	0	0	4	0	2	1	137./ 96.	.09

"*" before year means event ocurred within a 2 degree square centered on central point

NPPT - 580 - 005
EH 3-19/86

08665 0337

NPPI - 580 - 005
ESL 3-20/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Ste	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
*73	4	19	2330	KS	011	1	3933	9529	0	0	0	30	0	0	1	2 0 2	165./ 29.	.01
*73	4	30	2130	KS	013	1	3927	9514	0	0	0	30	0	0	1	0 2	161./ 57.	.00
*73	5	6	1630	KS	016	1	3935	9540	0	0	0	40	0	0	2	0 0 2	182./ 45.	.02
73	9	25	1715	KS	034	2	3903	9735	3954	9652	69	20	0	2	7	3 4 2	229./120.	2.63
73	9	25	1630	KS	035	1	3913	9736	3921	9733	3	20	0	0	5	2 2 1	235./111.	.15
73	9	25	2330	KS	041	1	3929	9720	3933	9715	4	20	0	0	5	2 2 1	237./ 96.	.17
73	9	26	200	KS	042	1	3921	9705	0	0	2	10	0	0	5	2 1 1	228./ 90.	.05
73	11	20	2200	KS	055	1	3949	9720	0	0	0	6	0	0	4	1 0 1	249./ 85.	.00
73	11	20	55	KS	056	1	3817	9545	0	0	1	10	0	0	5	2 0 1	183./124.	.02
73	4	17	1700	MO	009	2	4005	9424	4010	9417	1	15	0	0	3	2 2 1	106./ 59.	.03
73	4	19	1800	MO	010	1	3942	9412	0	0	1	15	0	0	3	2 1 1	121./ 77.	.03
73	4	20	1655	MO	018	1	3919	9330	0	0	5	0	0	0	4	2 2 1	122./117.	.00
73	4	21	1420	MO	028	2	4020	9333	4028	9317	13	132	0	1	5	4 3 3	91./ 95.	3.45
73	5	1	1330	MO	031	1	3905	9336	0	0	0	15	0	0	3	2 0 1	128./121.	.01
73	5	7	1220	MO	037	1	3919	9424	0	0	0	6	0	0	4	2 0 1	138./ 85.	.01
*73	6	16	1545	MO	065	1	3945	9450	0	0	6	0	0	14	6	2 2 2	134./ 51.	.00
73	7	18	1730	MO	068	1	3921	9404	0	0	0	0	0	0	0	1 1	130./ 94.	.09
73	4	30	740	NE	003	1	4103	9745	0	0	0	0	0	0	4	0 0	296./107.	.00
73	5	26	1400	NE	005	1	4110	9727	0	0	0	0	0	0	4	0 3	301./ 96.	.00
73	5	26	1515	NE	006	1	4043	9742	0	0	0	0	0	0	0	0 1	285./ 98.	.00
73	5	26	1630	NE	007	1	4126	9720	0	0	0	0	0	0	3	0 1	310./100.	.00
73	6	2	2030	NE	008	1	4002	9804	0	0	0	0	0	0	2	1 2	260./113.	.00
73	7	3	2130	NE	012	1	4113	9645	0	0	0	0	0	0	6	1 1	319./ 76.	.00
73	9	25	2120	NE	017	1	4006	9736	0	0	0	0	0	0	4	0 1	261./ 92.	.00
73	10	9	2000	NE	019	1	4142	9712	0	0	1	0	0	0	4	0 0 1	319./107.	.00
74	4	28	1400	IA	001	1	4139	9528	0	0	0	0	0	0	2	0 0	31./125.	.03
*74	5	13	1630	IA	004	1	4103	9504	4113	9453	6	6	0	0	5	3 2 1	29./ 34.	.05
74	6	18	2135	IA	021	1	4144	9337	4131	9332	9	120	2	50	7	4 2 3	47./123.	2.12
74	7	3	1435	IA	024	1	4206	9451	0	0	0	0	0	0	0	0 0	18./111.	.00
74	3	8	100	KS	001	7	3839	9642	3940	9530	28	66	0	0	5	2 4 3	206./114.	3.59
74	4	17	1645	KS	002	1	3947	9747	3958	9740	4	5	0	0	3	1 2 0	231./105.	.04
74	4	19	1650	KS	003	1	3934	9737	0	0	0	5	0	0	3	1 0 0	243./103.	.00
74	5	10	1820	KS	008	1	3954	9759	3954	9748	2	6	0	0	3	1 1 1	256./112.	.03
74	5	17	1930	KS	013	1	3930	9802	3927	9800	0	6	0	0	3	0 0 1	245./122.	.01
74	6	8	1845	KS	022	3	3825	9613	3854	9552	26	528	6	177	7	4 4 3	193./119.	26.33
74	3	8	130	MO	001	1	3934	9356	3947	9330	27	30	0	0	4	1 3 2	121./ 92.	1.56
74	5	13	1830	MO	010	1	3953	9425	3958	9417	7	15	0	0	4	1 2 1	115./ 62.	.22
74	6	8	1900	MO	014	1	4013	9433	0	0	0	0	0	0	4	0 0	99./ 50.	.00
*74	6	8	2200	MO	015	1	4012	9503	4017	9453	10	120	0	0	4	1 3 3	109./ 28.	2.39
74	4	20	1555	NE	010	2	4006	9756	4036	9729	33	0	0	0	4	3 3 1	262./107.	.00
74	5	10	1815	NE	016	1	4002	9836	0	0	1	70	0	0	6	2 1 3	260./113.	.13
*74	5	13	1620	NE	017	1	4015	9627	0	0	0	0	0	0	4	1 1	261./ 39.	.00
74	5	25	1036	NE	021	1	4103	9734	0	0	0	0	0	0	3	1 1	294./ 96.	.00
74	8	17	1115	NE	027	1	4032	9810	0	0	0	0	0	0	0	0 0	275./116.	.00
*74	8	30	1842	NE	030	1	4024	9615	4026	96**	4	0	0	0	5	1 2 1	276./ 28.	.00
74	10	30	1330	NE	032	1	4126	9728	0	0	0	0	0	0	4	0 0	308./103.	.00
75	3	23	1510	IA	001	1	4036	9331	0	0	0	0	0	0	3	0 0	81./ 98.	.00
*75	4	23	1455	IA	003	1	4045	9449	0	0	0	0	0	0	0	0 0	57./ 44.	.00
75	5	6	1600	IA	005	1	4124	9551	4132	9540	13	150	0	0	4	2 3 3	351./ 64.	3.76
75	5	6	1620	IA	006	1	4128	9552	4137	9548	5	0	0	0	4	2 2 2	331./ 68.	.00
75	5	7	1730	IA	007	1	4149	9530	0	0	0	0	0	0	4	2 1	4./ 85.	.00
75	5	7	1800	IA	008	1	4139	9513	4148	9512	5	0	0	0	4	2 2 2	13./ 80.	.00
75	5	7	1815	IA	009	1	4104	9422	0	0	0	0	0	0	0	0 0	53./ 72.	.00
75	5	7	1900	IA	010	1	4049	9350	0	0	0	0	0	0	4	2 1	71./ 56.	.00
75	5	7	1930	IA	011	1	4102	9347	0	0	10	0	0	0	5	2 2 1	64./ 71.	.00

"*" before year means event occurred within a 2 degree square centered on central point

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	F	F	Area	Area sq.mi
80	6	14	2000	NE	024	1	4140	9734	0	0	0	3	0	0	0	0	0	0	312./317.	.00
80	7	4	1145	NE	027	1	4042	9726	0	0	0	6	0	0	2	0	0	1	284./ 85.	.00
80	10	16	135	NE	035	2	4045	9815	4051	9814	5	6	0	0	4	1	2	1	281./124.	.06
81	3	29	920	IA	001	1	4130	9502	0	0	0	6	0	0	4	1		1	21./ 74.	.00
81	4	3	1840	IA	002	1	4157	9410	4201	9406	5	9	0	0	0	0	2	1	34./116.	.10
81	4	3	2010	IA	003	1	4045	9314	0	0	0	0	0	0	0	0		0	78./112.	.00
81	4	10	1730	IA	007	1	4130	9313	0	0	8	9	0	0	3	0	1	1	54./116.	.14
81	4	10	1755	IA	009	1	4128	9322	4134	9316	6	0	0	0	4	0	2	0	57./122.	.07
*81	4	11	1940	IA	011	1	4041	9445	4043	9453	5	15	0	2	6	2	2	1	84./ 45.	.15
*81	5	23	1432	IA	012	1	4042	9503	0	0	0	0	0	0	0	0		0	52./ 34.	.00
*81	5	23	1432	IA	013	1	4038	9500	0	0	0	0	0	0	0	0		0	31./ 55.	.00
81	5	23	1515	IA	014	1	4126	9439	0	0	0	0	0	0	0	0		0	34./ 79.	.03
81	5	23	1530	IA	015	1	4127	9443	0	0	0	0	0	0	0	0		0	32./ 78.	.03
81	5	23	1602	IA	016	1	4125	9430	0	0	0	0	0	0	0	0		0	39./ 82.	.00
81	5	23	1615	IA	017	1	4125	9418	0	0	0	0	0	0	0	0		0	43./ 91.	.00
81	5	23	1636	IA	018	1	4127	9414	0	0	0	0	0	0	0	0		0	44./ 91.	.00
81	5	23	1700	IA	019	1	4042	9419	4049	9403	12	39	0	0	5	2	5	2	71./ 63.	.95
81	5	23	1729	IA	020	1	4125	9405	0	0	0	0	0	0	3	1		0	47./ 95.	.03
81	6	7	0818	IA	022	1	4102	9347	0	0	0	9	0	0	3	1		1	54./ 93.	.00
81	6	7	2030	IA	023	1	4035	9318	0	0	0	0	0	0	3	1		0	81./107.	.05
*81	6	14	2022	IA	028	1	4102	9444	0	0	0	0	0	0	4	0		0	45./ 58.	.00
81	4	3	1705	KS	003	1	3903	9614	0	0	0	0	0	0	3	1		0	200./ 81.	.00
*81	4	3	1800	KS	004	1	3947	9500	0	0	1	10	0	0	5	2	1	1	139./ 45.	.03
81	4	13	1735	KS	005	1	3854	9549	0	0	0	0	0	0	1	0		0	186./ 87.	.00
81	5	23	1515	KS	014	1	3919	9454	0	0	2	10	0	0	2	0	1	1	154./ 78.	.04
81	5	23	1515	KS	015	1	3822	9514	0	0	1	15	0	0	6	2	1	1	171./120.	.04
81	5	25	1550	KS	019	1	3857	9606	0	0	0	5	0	0	0	0	0	0	195./ 87.	.00
81	6	19	1830	KS	021	1	3858	9516	3855	9508	6	60	1	33	7	3	2	5	168./ 85.	.72
81	6	20	1758	KS	022	1	3851	9445	0	0	0	5	0	0	0	0	0	0	135./ 99.	.00
81	6	21	300	KS	023	1	3907	9643	0	0	0	5	0	0	0	0	0	0	214./ 90.	.00
*81	6	24	1745	KS	026	1	3942	9632	0	0	0	5	0	0	0	0	0	0	227./ 57.	.00
81	5	29	1612	KS	027	1	3844	9533	0	0	0	5	0	0	0	0	0	0	178./ 97.	.00
81	7	19	845	KS	035	1	3908	9539	0	0	0	45	0	9	5	2	0	2	181./ 73.	.03
*81	4	13	1428	MO	001	1	3957	9513	0	0	2	30	0	0	1	0	0	2	141./ 31.	.16
*81	4	13	1442	MO	002	1	3958	9458	0	0	2	30	0	0	1	0	1	2	127./ 53.	.11
*81	4	13	1451	MO	003	1	3958	9513	0	0	1	30	0	0	3	1	1	2	140./ 31.	.06
81	4	13	1839	MO	004	1	4012	9425	0	0	1	30	0	0	5	1	1	2	99./ 50.	.05
81	5	23	1553	MO	013	1	3917	9446	3919	9442	4	15	0	0	1	0	2	1	148./ 76.	.12
81	5	15	645	MO	017	1	3855	9432	0	0	1	15	0	1	5	1	1	1	149./100.	.05
81	6	19	1943	MO	019	1	3838	9433	3839	9425	3	15	0	0	0	0	2	1	154./115.	.10
81	6	19	2010	MO	020	1	3838	9434	0	0	1	15	0	0	0	0	1	1	154./114.	.03
81	6	21	1758	MO	023	1	3853	9434	0	0	1	15	0	0	0	0	1	1	150./101.	.03
81	6	21	1814	MO	024	1	3902	9436	0	0	1	15	0	0	0	0	1	1	147./ 93.	.03
81	6	21	1814	MO	025	1	3849	9430	0	0	1	15	0	0	0	0	1	1	150./107.	.03
81	6	21	1838	MO	026	1	3900	9434	0	0	0	15	0	0	2	0	0	1	145./ 95.	.01
81	6	21	2005	MO	027	1	3829	9436	0	0	1	15	0	0	0	0	1	1	157./122.	.03
81	6	29	1805	MO	030	1	3855	9423	0	0	1	15	0	0	0	0	1	1	146./104.	.03
81	4	3	1315	NE	001	1	4035	9736	4037	9729	6	15	0	0	0	0	2	1	279./ 91.	.19
81	4	3	1400	NE	002	1	4052	9731	0	0	0	9	0	0	2	0	0	1	294./ 77.	.00
81	4	3	1415	NE	003	1	4052	9652	4053	9642	5	15	0	0	5	2	2	1	299./ 64.	.15
81	7	14	1725	NE	009	1	4053	9721	0	0	0	45	0	0	4	1	0	2	292./ 84.	.02
81	7	19	2010	NE	011	1	4159	9716	4156	9713	4	15	0	0	5	1	2	1	323./122.	.12
82	3	19	530	IA	001	1	4037	9428	0	0	2	30	0	0	3	1	1	2	73./ 55.	.11
82	4	2	1410	IA	002	1	4127	9410	0	0	0	15	0	0	4	1	0	1	45./ 91.	.01
82	5	15	1410	IA	005	1	4125	9356	0	0	0	0	0	0	4	1	0	0	60./123.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

08665 0338

NPPI - 580 - 005
3-21/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
75	6	14	1233	IA 021	1	4131	9354	4131	9347	6	0	0	0	3	1 2 1	48./105.	.00
*75	6	18	900	IA 022	1	4040	9514	0	0	0	0	0	0	4	2 1	44./ 26.	.00
75	6	18	500	IA 023	1	4122	9330	0	0	0	0	0	0	3	2 1	58./114.	.00
75	6	23	1705	IA 025	1	4046	9329	0	0	0	0	0	0	4	1 1	76./101.	.00
75	4	27	1805	KS 002	1	3936	9808	0	0	0	3	0	0	3	0 0 0	249./124.	.00
75	5	22	1330	KS 005	1	3945	9813	3949	9810	1	10	0	0	4	1 0 1	253./125.	.02
75	9	10	1650	KS 013	1	3903	9614	0	0	0	1	0	0	1	0 0 0	200./ 81.	.00
*75	12	13	2305	KS 017	1	3950	9605	3955	9547	1	96	0	0	5	1 1 3	214./ 37.	.29
75	4	23	1440	MO 002	1	3942	9358	3946	9346	9	120	1	3	6	4 2 3	117./ 86.	2.11
75	4	23	1605	MO 003	2	3944	9321	3947	9305	11	150	0	2	5	3 3 3	109./112.	3.31
*75	11	29	1630	MO 015	1	3946	9451	0	0	3	45	0	0	4	1 1 2	134./ 50.	.26
75	11	29	1810	MO 016	1	3914	9350	0	0	8	15	0	0	5	0 2 1	129./107.	.23
*75	12	5	140	MO 017	1	3922	9433	3922	9447	5	8	0	0	4	1 2 1	149./ 61.	.05
75	12	14	310	MO 018	1	3944	940	0	0	0	6	0	0	3	1 0 1	116./ 84.	.01
75	3	27	1600	NE 001	1	4113	9743	0	0	0	18	0	0	3	1 0 2	303./ 96.	.02
*75	3	27	1645	NE 002	1	4115	9504	0	0	0	90	0	4	5	2 0 3	340./ 57.	.09
75	4	27	930	NE 005	1	4013	9734	0	0	0	6	0	0	3	2 0 1	263./ 99.	.00
75	4	27	1100	NE 007	1	4029	9700	4037	9656	3	12	0	0	5	1 2 1	277./ 83.	.07
75	4	27	1125	NE 008	1	4049	9640	0	0	0	3	0	0	4	0 0 0	301./ 55.	.00
75	5	6	1345	NE 016	1	4156	9712	4212	9714	16	50	0	1	5	3 3 3	324./120.	1.54
*75	5	6	1535	NE 017	2	4113	9604	4117	9601	7	90	3	133	5	4 2 3	338./ 33.	1.15
*75	5	6	1500	NE 018	1	4117	9635	4120	9635	1	5	0	0	3	0 1 1	323./ 71.	.01
75	5	10	1745	NE 022	1	4106	9737	0	0	0	3	0	0	3	0 0 0	297./100.	.00
*75	5	22	1555	NE 027	1	4101	9558	0	0	0	5	0	0	0	0 0 0	339./ 43.	.00
75	5	25	1900	NE 028	1	4024	9700	0	0	0	5	0	0	0	0 0 0	273./ 63.	.00
75	5	25	1900	NE 029	1	4205	9624	0	0	0	0	0	0	2	0 0 0	341./105.	.00
75	5	25	1900	NE 030	1	4208	9629	0	0	0	0	0	0	2	0 0 0	341./113.	.00
75	5	25	1915	NE 031	1	4010	9700	0	0	0	0	0	0	0	0 0 0	267./ 63.	.00
75	6	2	1445	NE 036	1	4048	9719	0	0	0	60	0	0	0	0 0 3	290./ 80.	.01
75	6	2	1710	NE 038	1	4007	9640	0	0	0	8	0	0	5	2 0 1	254./ 49.	.00
75	6	15	2130	NE 039	1	4121	9757	4045	9702	19	60	0	0	5	3 3 3	300./120.	2.16
75	6	18	330	NE 042	1	4039	9707	4041	9705	0	15	0	0	4	1 0 1	285./ 70.	.02
*75	6	18	330	NE 043	1	4022	9551	4038	9550	1	60	0	0	5	1 1 3	276./ 10.	.21
75	6	20	2330	NE 057	1	4134	9751	0	0	0	15	0	0	4	0 0 1	306./123.	.01
*75	9	4	115	NE 076	1	4011	9528	0	0	0	0	0	0	5	0 0	143./ 13.	.00
75	12	13	2130	NE 077	1	4002	9735	4007	9729	4	18	0	0	5	2 2 2	239./ 92.	.14
*75	12	13	2340	NE 078	1	4013	9614	0	0	1	15	0	0	4	2 0 1	234./ 29.	.03
76	4	16	2015	IA 001	1	4145	9401	4149	9355	1	20	0	0	2	2 0 2	45./112.	.04
76	4	23	1920	IA 002	1	4118	9316	4121	9313	1	10	0	0	0	1 1 1	62./121.	.02
*76	5	28	1800	IA 003	1	4033	9536	0	0	0	30	0	0	4	1 0 2	3./ 34.	.03
76	6	12	1830	IA 004	4	4123	9356	4149	9320	3	30	0	0	4	1 4 1	49./102.	.22
76	6	12	1930	IA 005	2	4124	9402	4127	9344	1	30	0	0	1	1 3 2	49./ 96.	.09
76	6	13	1415	IA 007	2	4143	9406	4159	9401	18	30	0	0	5	3 3 2	40./107.	1.07
76	6	13	1430	IA 008	2	4156	9352	4211	9336	22	264	0	9	7	5 3 4	40./123.	11.01
76	6	13	1500	IA 012	2	4125	9508	4137	9450	10	30	0	0	4	2 3 2	19./ 68.	.59
76	6	26	1715	IA 015	1	4127	9536	4129	9530	5	60	0	6	6	4 2 3	1./ 66.	.55
76	7	28	123	IA 016	1	4131	9321	0	0	1	30	0	0	4	2 1 2	56./124.	.07
76	8	11	1415	IA 017	1	4204	9444	0	0	2	30	0	0	4	2 0 2	21./111.	.11
76	3	29	1330	KS 002	1	3924	9744	0	0	2	5	0	0	0	0 0 0	240./113.	.02
*76	4	17	1845	KS 008	2	3933	9627	3947	9618	1	84	0	0	5	1 3 3	218./ 61.	.29
76	4	14	1845	NE 003	1	4007	9713	4013	9712	6	7	0	0	5	1 2 1	239./ 74.	.09
76	4	15	1815	NE 004	1	4044	9743	0	0	0	0	0	0	5	1 1	284./ 97.	.00
76	4	15	1900	NE 005	1	4022	9806	4023	9753	11	30	0	0	5	2 3 2	271./113.	.65
76	4	23	1855	NE 006	1	4001	9640	4006	9631	9	18	0	0	4	1 2 2	247./ 52.	.33
76	5	13	1521	NE 007	1	4028	9665	0	0	0	3	0	0	0	0 0 0	278./ 51.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

0 8 6 6 5 0 3 8 9

NPPM – 580 – 005
EZL 3-22/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
*76	6	26	1645	NE 014	1	4114	9510	0	0	1	15	C	23	6	1 1 1	336./ 38.	.01
77	5	4	1915	IA 011	1	4147	9432	0	0	1	0	0	0	0	1	30./ 99.	.00
77	5	4	1926	IA 012	1	4131	9437	0	0	1	9	0	0	4	1 1	28./102.	.02
77	5	13	1428	IA 019	1	4219	9430	0	0	1	6	0	0	3	1 1	17./123.	.01
77	8	13	1600	IA 029	1	4155	9546	0	0	0	6	0	0	0	0 1	356./ 97.	.00
77	8	15	1845	IA 030	1	4144	9336	0	0	0	18	0	0	0	0 2	48./123.	.01
77	9	23	1700	IA 035	1	4148	9456	0	0	1	3	0	0	4	1 0	20./ 92.	.01
77	5	4	1130	KS 004	1	3827	9448	3836	9441	4	13	0	0	5	2 2 1	161./121.	.14
77	5	4	1900	KS 005	2	3848	9522	3855	9449	12	90	0	1	6	3 4 3	172./ 94.	2.09
77	5	4	1900	KS 006	1	3853	9448	3854	9439	3	21	0	0	5	2 1 2	156./ 96.	.13
77	5	5	1740	KS 007	1	3857	9538	3559	9537	1	9	0	0	3	1 0 1	180./ 84.	.02
77	5	4	1315	MO 006	1	3909	9355	3912	9330	13	30	1	5	6	3 3 2	135./114.	.75
77	5	4	1705	MO 008	3	3913	9418	3921	9405	14	90	0	5	3	4 3 3	138./ 92.	2.40
77	5	4	1930	MO 009	3	3919	9400	3926	9307	47	264	0	1	6	4 4 4	129./ 98.	23.91
77	5	21	1645	MO 011	1	4316	9410	0	0	1	30	0	0	4	1 1 2	94./ 67.	.04
77	5	21	1900	MO 012	1	4007	9337	4010	9334	4	45	0	0	4	1 2 2	99./ 94.	.37
77	11	8	2355	MO 016	1	3903	9434	0	0	1	30	0	0	4	0 0 2	149./ 92.	.06
77	11	20	915	MO 017	1	3908	9417	0	0	0	0	0	0	3	0 0	139./ 96.	.00
77	4	16	1500	NE 033	1	4128	9630	0	0	1	15	0	0	4	1 1	330./ 75.	.04
77	5	4	1520	NE 006	1	4136	9708	4143	9707	8	60	0	0	5	3 2 3	318./101.	.92
77	5	4	1525	NE 007	1	4156	9716	0	0	0	6	0	0	0	0 1	322./120.	.00
77	5	4	1615	NE 008	1	4119	9649	0	0	0	6	0	0	3	0 1	317./ 79.	.01
77	5	16	2000	NE 013	1	4054	9731	0	0	0	0	0	0	0		271./ 92.	.00
*77	5	25	1420	NE 038	1	4120	9637	0	0	0	9	0	0	2	0 1	323./ 74.	.00
77	6	17	1110	NE 044	2	4044	9743	4040	9739	5	21	0	0	5	1 1 2	284./ 97.	.23
77	7	7	319	NE 049	2	4207	9642	4200	9613	25	23	0	0	6	3 2	336./118.	1.10
77	7	24	538	NE 054	1	4138	9633	0	0	0	0	0	0	5	1	332./ 87.	.00
77	7	30	130	NE 055	1	4202	9633	0	0	0	0	0	0	5	1	338./109.	.00
77	8	3	2335	NE 056	1	4004	9740	0	0	0	0	0	0	5		260./ 95.	.00
77	8	15	2030	NE 059	1	4048	9540	0	0	0	0	0	0	4	0	300./ 54.	.00
77	8	29	1950	NE 060	1	4135	9610	0	0	0	0	0	0	6	0	342./ 79.	.00
77	9	11	1840	NE 066	2	4035	9520	4041	9816	3	3	0	0	4	2 0	276./124.	.02
*78	6	19	2115	IA 005	1	4042	9530	0	0	0	3	0	0	4	1 0 0	16./ 77.	.00
78	6	25	1830	IA 007	1	4215	9433	0	0	0	3	0	0	0	0 0	23./124.	.00
78	7	5	1940	IA 014	1	4219	9514	0	0	1	67	0	0	4	1 3	9./119.	.13
78	5	11	1700	KS 003	1	3837	9459	3836	9446	1	30	0	1	6	2 1 2	166./105.	.07
78	5	23	1830	KS 007	1	3849	9543	3849	9538	1	9	0	1	5	2 1 1	152./ 92.	.02
78	5	31	1600	KS 011	2	3919	9623	3928	9543	7	390	3	1	5	3 2 4	207./ 71.	5.47
78	6	17	1815	KS 013	1	3841	9539	3841	9531	4	45	16	3	5	1 2 2	180./100.	.37
78	6	17	1820	KS 014	1	3837	9527	0	0	0	1	0	0	1	0 0 0	175./106.	.00
78	6	19	1815	KS 016	1	3953	9914	0	0	0	2	0	0	4	0 0 0	257./123.	.00
78	7	6	1645	KS 023	1	4003	9653	0	0	0	0	0	0	0	0	250./ 61.	.00
78	4	5	2140	MO 001	1	3905	9420	0	0	0	15	0	0	3	1 0 1	141./ 97.	.00
78	5	12	1720	MO 008	1	3958	9351	0	0	1	60	0	1	5	1 3	106./ 85.	.11
78	4	7	1740	NE 003	1	4005	9320	0	0	0	3	0	0	2	2 0 0	263./125.	.00
78	4	7	2135	NE 004	2	4052	9514	4107	9745	31	23	0	1	7	3 2	285./123.	1.39
78	4	7	2336	NE 005	2	4111	9723	4118	9722	8	13	0	0	6	2 1	302./ 95.	.24
78	4	7	2350	NE 006	1	4116	9713	0	0	2	6	0	0	4	1 1	308./ 90.	.02
78	4	8	340	NE 007	1	4126	9602	0	0	0	3	0	0	2	0 0	345./ 67.	.00
78	5	28	2030	NE 019	1	4207	9642	0	0	0	0	0	0	0	0	336./118.	.00
78	5	30	1625	NE 020	1	4037	9727	4040	9724	4	9	0	0	5	2 2 1	281./ 86.	.07
78	5	30	1730	NE 021	1	4035	9714	0	0	1	6	0	0	4	1 1	251./ 74.	.01
78	5	30	1800	NE 022	1	4013	9746	0	0	0	6	0	0	4	0 1	255./ 98.	.01
78	5	30	1500	NE 023	1	4013	9735	0	0	1	6	0	0	4	1 1	265./ 90.	.01
78	5	30	1820	NE 024	1	4018	9544	0	0	0	0	0	0	0	1	267./ 50.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

C 8 6 6 5 0 3 9 0

Tornadoes within 125. NM of BROWNSVILLE, NT

Yr	Mo	Dy	Time (CST)	Sta	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	F	F	Azmth	Area sq.mi
78	6	19	1915	NE	026	1	4026	9744	0	0	0	3	0	0	4	0	0		276./ 51.	.00
78	6	19	1915	NE	027	1	4025	9726	0	0	4	2	0	0	4	2	0		273./ 62.	.02
78	7	6	1657	NE	032	2	4040	9657	4039	9655	3	30	0	0	4	2	2	2	251./ 66.	.20
78	7	6	1700	NE	033	1	4041	9646	0	0	1	9	0	0	4	1	1		249./ 58.	.02
78	7	18	2230	NE	035	1	4016	9644	0	0	6	0	0	0	5	0	1		264./ 51.	.00
78	7	21	1700	NE	038	1	4003	9708	0	0	0	7	0	0	4	0	1		255./ 70.	.01
*78	9	15	1620	NE	042	1	4009	9614	4010	9608	2	30	0	0	3	1	0		246./ 30.	.15
79	3	18	2300	IA	001	1	4123	9502	0	0	0	9	0	0	2	1	0	1	24./ 65.	.01
*79	3	29	1810	IA	003	1	4035	9457	4054	9434	29	150	0	1	6	3	3	3	66./ 54.	8.43
79	3	29	2020	IA	004	3	4046	9423	4122	9335	56	150	0	4	6	3	4	3	66./ 62.	10.15
79	3	29	2040	IA	005	1	4125	9330	4131	9321	9	18	0	0	5	2	2	2	36./116.	.33
79	6	28	2040	IA	026	1	4140	9412	4132	9401	13	12	0	0	5	1	3	1	39./102.	.33
79	7	10	1225	IA	027	1	4136	9354	0	0	0	9	0	0	2	0	0	1	46./105.	.00
79	7	27	1530	IA	030	1	4124	9531	0	0	1	18	0	0	4	1	1	2	24./ 69.	.05
79	7	30	222	IA	032	2	4217	9532	4211	9512	24	30	0	0	5	1	3	2	360./116.	1.37
79	7	30	305	IA	033	1	4147	9545	0	0	0	9	0	0	4	0	0	1	45./121.	.00
*79	9	28	1328	IA	048	3	4035	9546	4032	9513	39	160	2	14	3	2	4	2	350./ 35.	11.81
*79	9	5	2345	IA	051	1	4049	9517	0	0	0	9	0	0	4	1	0	1	30./ 32.	.01
79	3	13	2050	KS	001	1	3956	9643	3959	9639	1	45	0	0	3	1	1	2	243./ 55.	.13
*79	3	29	1735	KS	002	2	3945	9522	3947	9518	1	15	0	0	3	0	0	1	161./ 38.	.04
79	4	11	1700	KS	005	1	3926	9544	3929	9541	0	9	0	1	5	1	3	0	114./ 75.	.01
79	5	19	1423	KS	012	1	3943	9751	0	0	0	3	0	0	4	0	0	0	250./108.	.07
79	6	19	1500	KS	013	1	3942	9730	0	0	0	3	0	0	4	1	0	0	246./ 95.	.00
79	10	15	1650	KS	027	4	3911	9738	3928	9622	28	120	0	11	4	2	3	3	233./116.	6.39
79	10	19	1740	KS	028	3	3915	9621	3934	9525	54	60	0	5	3	2	4	3	207./ 74.	6.17
*79	10	21	1945	KS	029	1	3934	9520	3936	9518	2	30	0	1	3	1	1	2	154./ 49.	.17
79	4	10	1925	MO	006	2	3915	9425	3930	9413	20	30	0	9	3	2	3	2	140./ 86.	1.19
79	5	19	1430	NE	005	1	4026	9743	4025	9740	3	2	0	0	2	0	1	1	273./ 95.	.01
79	6	19	1535	NE	007	1	4147	9540	0	0	2	6	0	0	3	1	1	1	332./ 95.	.02
79	8	23	1630	NE	018	1	4031	9315	4019	9804	10	3	0	0	0	0	3	0	275./120.	.05
79	8	20	1815	NE	019	1	4020	9804	4025	9753	7	3	0	0	1	0	2	0	269./111.	.04
79	10	15	1905	NE	020	1	4027	9737	4029	9735	4	15	0	0	3	1	2	1	261./ 92.	.12
80	5	29	2100	IA	007	1	4153	9530	0	0	1	9	0	0	4	1	1	1	334./ 89.	.02
80	5	29	2120	IA	008	1	4207	9456	0	0	0	9	0	0	4	1	0	1	16./110.	.00
80	6	2	630	IA	010	1	4039	9325	4039	9319	5	24	0	0	5	2	2	2	90./102.	.24
80	6	2	700	IA	011	1	4043	9301	0	0	2	9	0	3	4	1	1	1	81./121.	.01
80	6	2	735	IA	012	2	4038	9255	4043	9233	20	24	0	5	4	2	3	2	82./125.	.91
80	6	2	1545	IA	013	2	4037	9155	4035	9319	31	42	0	0	6	4	3	2	78./ 80.	2.51
80	6	5	1200	IA	015	1	4136	9339	4137	9336	2	12	0	0	5	1	1	1	50./115.	.05
80	5	14	1920	IA	018	2	4115	9344	4109	9336	10	9	0	0	5	1	2	1	58./101.	.19
80	6	14	1920	IA	019	2	4115	9344	4109	9336	10	9	0	0	5	1	2	1	58./101.	.19
80	7	4	2130	IA	024	1	4122	9456	4124	9453	3	18	0	0	4	1	1	2	27./ 67.	.17
80	5	31	1445	KS	005	1	3911	9613	3907	9614	5	0	0	0	4	1	2	0	204./ 77.	.00
80	5	31	1555	KS	006	1	3905	9534	0	0	2	66	0	0	5	2	1	3	178./ 75.	.25
80	5	31	1540	KS	007	2	3858	9506	3858	9458	1	0	0	1	5	2	2	0	183./ 87.	.00
80	7	9	1415	KS	014	1	3944	9500	0	0	0	3	0	0	4	0	0	0	251./115.	.00
80	5	12	1600	MO	004	1	3907	9329	3914	9300	5	30	0	0	5	2	2	2	126./124.	.31
80	5	29	1835	NE	005	1	4029	9729	4038	9725	3	3	0	0	3	1	1	0	275./ 85.	.02
80	5	29	2030	NE	006	3	4114	9751	4129	9646	8	24	0	2	6	1	3	2	310./ 82.	.39
80	5	29	1940	NE	007	1	4027	9729	0	0	0	1	0	0	0	0	0	0	275./ 85.	.00
80	5	29	1945	NE	008	1	4013	9736	4015	9732	2	5	0	0	5	1	1	0	263./ 91.	.02
80	6	2	330	NE	011	1	4014	9736	0	0	2	90	0	0	4	2	1	3	266./ 90.	.34
80	6	3	2112	NE	017	3	4054	9817	4051	9817	3	330	0	18	6	2	2	3	285./125.	3.34
80	6	3	2206	NE	018	2	4050	9817	4050	9803	7	600	0	2	4	1	2	3	284./124.	8.91
80	6	6	440	NE	019	1	4146	9710	0	0	0	2	0	0	3	1	0	0	321./109.	.00

'*' before year means event occured within a 2 degree square centered on central point

08555 0392

NPF?-SBO-005
2-25/86

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Ste	Seq	[illegible] # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
82	5	15	1600	IA	006	1	4122	9535	0	0	0	0	0	0	1	0 0 0	2./ 69.	.00
82	5	20	930	IA	012	1	4123	9359	0	0	0	0	0	0	1	0 0 0	50./ 97.	.00
82	6	8	2015	IA	021	1	4107	9329	0	0	0	3	0	0	1	0 0 0	65./108.	.00
82	6	15	100	IA	022	1	4052	9315	0	0	0	3	0	0	4	1 0 0	74./014.	.00
82	6	15	130	IA	023	1	4136	9337	0	0	0	15	0	0	5	1 0 2	50./118.	.01
82	6	15	130	IA	024	1	4117	9411	0	0	0	3	0	0	4	1 0 0	49./ 56.	.00
82	6	17	1700	IA	025	1	4150	9407	0	G	0	3	0	0	1	0 0 0	37./112.	.00
82	7	17	1430	IA	029	1	4200	9358	0	0	0	15	0	0	4	1 0 1	37./124.	.01
82	11	11	1520	IA	033	1	4144	9337	0	0	0	9	0	0	3	0 0 0	47./123.	.01
82	5	15	2225	KS	022	1	3845	9449	0	0	0	0	0	0	1	0 0 0	158./101.	.00
82	5	15	2228	KS	023	1	3937	9441	0	0	0	0	0	0	1	0 0 0	154./111.	.00
82	5	15	2306	KS	024	1	3934	9458	0	0	0	0	0	0	1	0 0 0	164./111.	.00
82	5	15	1200	KS	025	1	3843	9612	0	0	0	0	0	0	1	0 0 0	195./102.	.00
82	5	20	1445	KS	031	1	3927	9747	0	0	0	0	0	0	0	0 0 0	242./111.	.00
82	5	25	1530	KS	034	1	3845	9632	0	0	0	0	0	0	0	0 0 0	154./106.	.00
*82	5	28	1700	KS	035	1	3936	9511	0	0	4	0	0	0	4	1 0 0	155./ 50.	.00
*82	5	28	1705	KS	036	1	3946	9535	3947	9501	3	30	0	0	0	0 2 2	144./ 43.	.29
82	5	28	0014	KS	039	2	3835	9600	3818	9534	20	5	0	0	0	0 3 0	189./107.	.19
82	5	28	2025	KS	040	1	3824	9532	0	0	0	0	0	0	4	0 0 0	178./017.	.00
82	5	29	2030	KS	041	1	3829	9550	3835	9543	10	15	0	0	4	0 2 1	185./113.	.29
*82	6	8	1915	KS	044	1	3922	9559	3926	9547	16	60	0	0	5	2 3 3	195./ 61.	1.23
82	6	9	2106	KS	045	1	3917	9531	0	0	0	1	0	0	1	0 0 0	175./ 64.	.00
82	6	9	2125	KS	046	1	3919	9518	0	0	0	1	0	0	1	0 0 0	166./ 64.	.00
82	11	11	1608	KS	057	2	3822	9530	3825	9526	4	30	0	0	4	1 2 2	177./119.	.29
82	4	2	1430	MO	007	1	3903	9411	3908	9407	6	90	0	0	5	1 2 3	159./103.	1.15
82	4	2	1432	MO	008	1	3908	9409	0	0	2	210	0	0	4	1 1 4	136./101.	.09
82	4	2	1525	MO	011	1	3910	9333	0	0	1	9	0	0	2	1 1 1	126./120.	.02
82	5	25	1810	MO	040	1	3853	9410	0	0	0	15	0	0	1	0 0 1	142./112.	.01
82	5	25	1938	MO	041	1	3945	9412	0	0	0	15	0	0	3	1 0 1	119./ 75.	.05
82	10	8	1505	MO	047	1	3924	9435	0	0	0	15	0	0	4	1 0 1	140./ 75.	.01
*82	4	15	1836	NE	001	2	4030	9612	4032	9607	4	21	0	0	5	2 2 2	289./ 27.	.20
*82	4	15	1913	NE	002	1	4034	9610	0	0	0	9	0	0	2	0 0 1	298./ 28.	.01
82	5	11	1720	NE	008	1	4001	9815	0	0	0	6	0	0	1	0 0 1	261./122.	.00
82	5	11	1736	NE	009	1	4012	9811	0	0	0	6	0	0	2	1 0 1	266./117.	.00
82	5	20	1735	NE	012	2	4134	9704	4137	9632	10	9	0	0	3	2 2 1	319./ 97.	.19
82	5	26	1530	NE	015	1	4103	9759	0	0	0	9	0	0	3	2 0 1	290./113.	.01
82	6	14	1927	NE	024	1	4057	9649	0	0	0	6	0	0	1	0 0 1	304./ 65.	.00
82	6	14	2050	NE	025	1	4044	9516	4051	9808	10	9	0	0	6	2 3 1	291./121.	.19
82	6	14	2030	NE	026	1	4014	9749	0	U	0	6	0	0	4	1 0 1	266./100.	.00
82	6	14	2115	NE	027	1	4024	9657	0	0	0	15	0	0	5	2 0 1	273./ 60.	.01
82	6	30	1654	NE	030	1	4021	9738	0	0	0	6	0	0	1	0 0 1	270./107.	.00
*83	5	1	1330	IA	001	1	4039	9540	4042	9535	6	6	0	3	6	2 2 1	355./ 17.	.07
*83	5	1	1340	IA	002	2	4032	9518	4037	9503	10	6	0	0	5	1 3 1	26./ 34.	.12
*83	5	1	1330	IA	003	1	4042	9513	0	0	1	6	0	0	3	0 1 1	42./ 28.	.01
*83	5	1	1410	IA	005	1	4037	9503	0	0	1	3	0	0	2	0 1 0	59./ 33.	.01
83	5	1	1500	IA	006	1	4139	9452	0	0	2	6	0	0	4	1 1 1	24./ 86.	.02
83	5	6	1700	IA	008	1	4134	9557	4145	9545	16	6	0	0	5	2 3 1	349./ 74.	.19
*83	5	6	1750	IA	009	1	4050	9501	0	0	0	9	0	0	5	1 0 1	44./ 40.	.00
83	5	6	1856	IA	010	1	4133	9406	0	0	0	3	0	0	3	1 0 0	44./100.	.00
83	5	6	1858	IA	011	1	4140	9337	0	0	0	8	0	0	4	1 0 1	49./120.	.01
83	5	6	1900	IA	012	1	4135	9332	0	0	1	18	0	0	6	2 1 2	52./120.	.03
83	5	27	1717	IA	013	1	4138	9453	0	0	1	6	0	0	4	1 1 1	19./103.	.01
83	5	27	1810	IA	014	1	4141	9433	0	0	0	6	0	0	4	1 0 1	31./ 96.	.01
83	7	2	222	IA	026	1	4146	9343	0	0	0	6	0	0	0	0 0 1	45./121.	.00
83	7	3	1702	IA	027	1	4104	9427	0	0	0	6	0	0	1	0 0 1	31./ 67.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

08665 -9393

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	ste	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	P	P	Azmth	Area sq.mi
83	9	5	1805	IA	030	1	4223	9604	0	0	2	35	0	0	5	2	1	2	351./124.	.18
83	5	6	1730	KS	004	1	3854	9552	3903	9535	18	45	1	25	7	3	3	2	187./ 88.	1.57
*83	5	12	1620	KS	005	1	3941	9526	0	0	2	15	0	0	4	0	1	1	167./ 41.	.07
83	3	18	1415	KS	008	2	3943	9655	3946	9643	9	5	0	0	3	0	2	0	237./ 70.	.09
83	5	18	1525	KS	009	1	3954	9703	0	0	0	5	0	0	2	0	0	0	248./ 71.	.03
83	5	27	1730	KS	012	1	3818	9551	3822	9550	4	15	0	0	5	1	2	1	185./123.	.11
83	5	27	1736	KS	013	1	3855	9725	0	0	0	5	0	0	2	0	0	0	224./120.	.00
83	6	10	1630	KS	020	1	3933	9738	0	0	0	2	0	0	1	0	0	0	243./104.	.00
83	6	10	1816	KS	021	1	3926	9721	0	0	0	2	0	0	2	0	0	0	235./ 97.	.00
*83	6	13	1925	KS	027	1	3945	9521	0	0	0	2	0	0	1	0	0	0	160./ 37.	.00
83	6	15	319	KS	028	1	3935	9700	0	0	0	2	0	0	4	0	0	0	235./ 73.	.00
*83	6	18	1755	KS	029	1	3935	9637	0	0	0	2	0	0	4	0	0	0	225./ 65.	.00
83	9	25	2015	KS	031	1	3947	9752	0	0	0	5	0	0	4	0	0	0	252./108.	.00
83	5	27	1846	MO	022	1	4029	9418	0	0	0	4	0	0	3	0	0	0	83./ 61.	.00
*83	5	1	1226	NE	001	1	4019	9610	4020	9606	3	6	0	0	4	1	2	1	265./ 24.	.04
83	6	13	1306	NE	039	2	4150	9703	4153	9658	5	6	0	0	5	1	2	1	325./109.	.06
83	8	13	1300	NE	010	1	4142	9709	0	0	0	6	0	0	4	1	0	1	320./106.	.00
84	4	26	1710	IA	002	3	4219	9455	4219	9448	25	80	0	0	6	2	3	3	15./122.	2.70
84	4	26	1913	IA	004	1	4203	9431	0	0	0	30	0	0	2	0	0	2	26./113.	.03
84	6	7	1542	IA	009	1	4225	9535	4235	9521	16	45	0	1	6	2	3	2	1./124.	1.41
*84	6	7	1543	IA	010	1	4110	9506	4127	9445	25	45	0	8	6	2	3	2	25./ 55.	2.15
84	6	7	1610	IA	012	1	4219	9523	4227	9515	12	30		1	6	2	3	2	5./119.	.71
*84	6	7	1658	IA	015	3	4044	9502	4059	9444	25	30		3	6	3	3	2	50./ 36.	1.32
84	6	7	1554	IA	024	1	4103	9325	0	0	0	15	0	0	6	1	0	1	69./109.	.01
84	6	7	1945	IA	025	1	4041	9414	4044	9402	11	45	1	3	6	2	3	2	23./ 67.	.94
84	6	7	2033	IA	026	1	4044	9321	0	0	0	15	0	0	4	1	0	1	76./106.	.01
84	6	11	1823	IA	028	1	4125	9419	0	0	0	0	0	0	4	0	0	0	43./ 87.	.00
84	6	11	1850	IA	029	1	4135	9343	0	0	0	0	0	0	3	0	0	0	49./113.	.00
84	6	11	1928	IA	030	1	4137	9337	0	0	0	0	0	0	0	0	0	0	30./118.	.00
84	6	11	1955	IA	031	1	4136	9337	0	0	0	0	0	0	3	0	0	0	50./119.	.00
84	6	17	1343	IA	044	1	4133	9537	0	0	0	3	0	0	3	0	0	0	1./ 70.	.00
84	6	21	1720	IA	046	1	4140	9450	0	0	2	15	0	0	0	0	1	1	24./ 87.	.07
*84	6	26	1818	IA	054	1	4116	9525	0	0	0	6	0	0	2	0	0	1	12./ 56.	.00
84	9	9	1614	IA	059	1	4145	9343	0	0	2	15	0	0	4	1	1	1	15./121.	.06
84	2	11	1805	KS	003	1	3831	9445	0	0	2	6	0	0	4	1	1	1	160./117.	.02
84	4	26	2125	KS	015	1	3936	9553	0	0	0	30	0	0	4	3	2	2	159./ 75.	.01
84	4	26	2145	KS	016	1	3914	9543	3921	9534	11	120	0	1	6	2	3	3	183./ 67.	2.58
*84	4	25	2220	KS	017	3	3924	9526	3948	9505	33	340	0	9	7	3	4	6	171./ 55.	22.71
84	4	27	1425	KS	032	1	3825	9624	0	0	0	30	0	0	3	0	0	2	197./121.	.01
*84	6	7	1533	KS	039	1	3949	9543	3959	9526	18	90	0	0	5	2	3	3	187./ 32.	3.22
84	6	9	1345	KS	044	1	3845	9644	0	0	0	0	0	0	0	0	0	0	208./109.	.00
84	10	31	1823	KS	061	1	3850	9538	0	0	1	30	1	0	5	1	1	2	180./ 91.	.06
84	10	31	1940	KS	062	1	3914	9507	0	0	1	30	0	0	5	1	1	2	160./ 71.	.05
84	4	26	2320	MO	005	1	4012	9433	4014	9424	8	30	0	0	5	2	2	2	100./ 50.	.47
84	6	7	2130	MO	016	1	3952	9406	0	0	1	30	0	0	5	2	1	2	112./ 76.	.06
84	6	7	2200	MO	017	1	3958	9349	3959	9346	2	30	0	0	6	2	1	2	105./ 87.	.16
*84	6	8	1650	MO	018	1	4012	9502	0	0	0	15	0	0	0	1	0	1	108./ 29.	.01
*84	6	8	1702	MO	019	1	4012	9452	0	0	1	15	0	0	4	1	1	1	104./ 36.	.03
84	5	18	1545	NE	005	1	4052	9800	0	0	0	3	0	0	4	1	0	0	286./112.	.00
84	6	4	1803	NE	012	1	4041	9717	0	0	0	3	0	0	0	1	0	0	279./122.	.00
*84	6	7	1800	NE	016	1	4006	9607	0	0	0	15	0	0	3	1	0	1	256./ 27.	.01
84	6	12	1657	NE	030	1	4016	9748	4018	9733	10	60	0	0	5	3	3	3	267./ 99.	1.22
84	6	12	1803	NE	031	1	4054	9650	4054	9630	13	45	0	0	6	2	3	2	301./ 64.	1.19
*84	6	12	1520	NE	032	1	4048	9609	4053	9559	9	30	0	0	4	2	2	2	319./ 36.	.54
*84	6	12	1830	NE	033	1	4052	9556	0	0	0	15	0	0	3	2	0	1	336./ 34.	.01

"*" before year means event occurred within a 2 degree square centered on central point

08665 0394

NPPM-580-005
EMH 3-27/96

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	St	Seq	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
84	6	17	1610	NE	040	1	4141	9743	0	0	0	9	0	0	0	0 0 1	311./123.	.00
84	6	17	1630	NE	041	1	4133	9715	0	0	1	15	0	0	5	2 1 1	[illegible]2./117.	.03
84	6	17	1700	NE	042	1	4155	9659	4201	9656	5	12	0	0	6	1 2 1	327./112.	.33
84	6	17	1720	NE	043	1	4202	9643	0	0	0	12	0	0	4	1 0 1	334./112.	.01
84	6	17	1800	NE	044	2	4145	9634	4146	9628	5	6	0	0	4	1 2 1	334./ 94.	.06
84	7	5	1930	NE	048	1	4001	9648	0	0	0	12	0	0	5	1 0 1	250./ 57.	.02
85	5	11	1458	IA	003	1	4131	9325	0	0	1	15	0	0	4	0 1 1	51./121.	.03
85	6	16	2000	IA	010	[illegible]	4101	9424	0	0	0	3	0	0	0	0 0 0	53./ 65.	.00
*85	6	23	1549	IA	012	1	4117	9309	0	0	0	5	0	0	0	0 0 0	21./ 60.	.00
*85	6	23	1606	IA	013	1	4113	9339	0	0	0	5	0	0	0	0 0 0	23./ 56.	.00
*85	6	23	1612	IA	014	1	4114	9310	0	0	1	15	0	1	5	1 1 1	22./ 57.	.04
85	6	25	1400	IA	015	1	4135	9422	0	0	0	3	0	0	0	0 0 0	52./ 72.	.00
85	6	26	1425	IA	016	1	4109	9425	0	0	0	3	0	0	0	0 0 0	49./ 73.	.00
85	6	26	1437	IA	017	1	4137	9408	0	0	0	3	0	0	0	0 0 0	42./101.	.00
85	9	22	2020	IA	027	1	4052	9329	0	0	0	15	0	0	6	2 0 1	72./102.	.01
85	4	13	1305	KS	003	1	3830	9549	0	0	0	9	0	0	3	0 0 1	184./111.	.00
85	8	3	1711	KS	013	2	3853	9727	3856	9720	2	120	0	0	3	1 2 3	224./122.	.49
85	8	3	1700	KS	014	1	3953	9729	0	0	0	1	0	0	0	0 0 0	224./123.	.00
85	8	17	1718	KS	016	1	3949	9624	0	0	2	15	0	0	5	1 1 1	201./100.	.06
85	8	17	1723	KS	017	1	3943	9615	0	0	0	1	0	0	0	0 0 0	194./102.	.00
85	8	17	1928	KS	018	1	3827	9615	0	0	0	1	0	0	0	0 0 0	196./119.	.00
85	5	26	1735	MO	005	1	3945	9430	0	0	0	15	0	0	0	0 0 1	125./ 63.	.01
85	5	26	1815	MO	006	1	3926	9419	0	0	0	15	0	0	0	0 0 1	133./ 84.	.01
*85	5	30	1824	MO	007	3	3736	9456	3931	9440	15	15	0	3	5	1 3 1	144./ 55.	.44
85	5	30	1928	MO	010	1	3935	9429	0	0	0	15	0	0	0	0 0 1	131./ 70.	.01
*85	6	17	2156	MO	012	1	3949	9451	0	0	0	1	0	0	0	0 0 0	132./ 43.	.00
85	6	21	1809	MO	013	1	3945	9411	0	0	0	1	0	0	0	0 0 0	119./ 76.	.00
85	3	3	1730	NE	002	1	4053	9753	0	0	0	15	0	0	4	1 0 1	287./107.	.09
85	3	3	1510	NE	003	1	4102	9736	0	0	0	15	0	0	4	1 0 1	295./ 98.	.09
85	3	3	1815	NE	004	1	4101	9726	4103	9723	3	15	0	0	5	1 1 1	296./ 91.	.10
85	4	19	1715	NE	005	1	4117	9730	0	0	0	15	0	0	4	1 0 1	304./101.	.00
85	4	19	1737	NE	006	1	4115	9738	0	0	1	90	0	0	6	1 1 3	309./ 87.	.17
*85	4	19	1830	NE	007	1	4039	9611	0	0	0	9	0	0	0	0 0 1	306./ 35.	.00
85	4	21	2245	NE	016	1	4019	9743	0	0	1	18	0	0	5	1 1 2	269./ 99.	.03
85	5	10	2155	NE	026	1	4053	9720	0	0	0	120	0	4	6	2 0 3	293./ 84.	.11
85	6	23	1725	NE	036	1	4054	9727	0	0	0	12	0	0	0	1 0 1	292./ 89.	.09
85	6	23	1740	NE	037	1	4106	9737	0	0	2	12	0	0	5	1 1 1	297./100.	.05
85	8	5	2027	NE	041	1	4038	9318	0	0	0	12	0	0	0	0 0 1	278./123.	.00
86	3	18	1603	IA	001	1	4125	9439	0	0	0	6	0	0	4	1 0 1	35./ 78.	.00
86	4	26	2105	IA	004	1	4201	9526	0	0	0	6	0	0	0	0 0 0	5./100.	.00
86	5	9	1836	IA	009	2	4136	9350	4135	9347	2	3	0	0	0	0 0 0	47./110.	.02
85	5	9	1840	IA	010	1	4135	9351	0	0	0	3	0	0	0	0 0 0	47./109.	.00
86	5	9	1848	IA	011	1	4134	9350	0	0	0	3	0	0	0	0 0 0	48./109.	.00
86	5	9	1855	IA	012	1	4137	9350	0	0	0	3	0	0	0	0 0 0	47./111.	.00
86	5	9	1909	IA	013	2	4137	9350	4137	9345	3	3	0	0	0	0 0 0	47./111.	.02
86	5	9	1912	IA	014	[illegible]	4137	9353	0	0	0	3	0	0	0	0 0 0	46./109.	.00
86	5	9	1940	IA	015	1	4151	9353	0	0	0	3	0	0	0	0 0 0	40./118.	.00
86	5	9	1949	IA	016	2	4141	9348	4141	9343	0	3	0	0	0	0 0 0	46./113.	.00
86	5	10	1552	IA	017	1	4049	9336	0	0	0	3	0	0	3	0 0 0	73./ 76.	.00
86	6	10	2005	IA	019	1	4059	9316	0	0	0	3	0	0	2	0 0 0	70./114.	.00
86	6	29	2105	IA	023	1	4151	9434	0	0	1	15	0	0	6	2 1 1	28./102.	.03
56	6	29	2150	IA	024	1	4131	9432	0	0	2	22	0	0	3	2 1 2	35./ 56.	.09
85	6	29	2235	IA	025	1	4135	9344	4136	9337	6	15	0	0	6	2 2 1	49./113.	.17
86	7	8	2015	IA	026	1	4039	9359	0	0	0	3	0	0	0	0 0 0	77./ 77.	.00
56	7	8	2145	IA	027	1	4048	9359	0	0	0	3	0	0	0	0 0 0	70./ 50.	.00

"*" before year means event ocurred within a 2 degree square centered on central point

08665 0395

NPPI-530-005
ESH 3-28/36

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	Sta	Seg	Total # seg	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F P P	AZRAN	Area sq.mi
86	7	13	2247	IA	028	1	4101	9349	0	0	1	15	0	0	5	2 1 1	64./ 91.	.03
86	7	13	2320	IA	029	1	4053	9335	0	0	0	12	0	0	5	1 0 1	71./ 95.	.01
86	7	28	2005	IA	034	1	4204	9536	0	0	0	3	0	0	0	0 0 0	1./103.	.00
86	9	28	1648	IA	039	2	4145	9336	4146	9300	30	75	0	0	6	4 3 1	47./124.	4.40
86	4	13	1845	KS	011	1	3949	9738	3949	9738	0	8	0	0	5	0 0 1	251./ 98.	.00
86	5	6	2030	KS	013	2	3852	9619	3855	9633	17	60	0	0	5	1 3 3	212./105.	1.97
86	5	16	1500	KS	020	1	3922	9717	3924	9705	10	30	0	0	4	1 2 2	232./ 97.	.62
*86	9	22	1520	KS	031	1	4003	9520	0	0	1	24	0	0	5	0 1 2	147./ 25.	.05
*86	9	22	1530	KS	032	1	3949	9545	0	0	0	7	0	0	4	0 0 1	190./ 32.	.00
86	4	3	1803	NE	007	1	4048	9740	4048	9740	0	6	0	0	0	0 0 1	285./ 95.	.00
86	4	13	1930	NE	013	1	4052	9732	4052	9732	0	6	0	0	4	1 0 1	290./ 92.	.00
86	4	26	1908	NE	016	1	4010	9734	4018	9725	12	12	0	0	5	2 3 1	263./ 89.	.28
86	4	26	1955	NE	017	1	4045	9658	4045	9658	0	6	0	0	2	0 0 1	292./ 65.	.00
86	6	10	1933	NE	025	2	4029	9317	4030	9815	2	15	0	0	3	1 1 1	274./121.	.05
86	6	29	2002	NE	031	1	4118	9733	0	0	0	15	0	0	4	1 0 1	303./104.	.01
86	6	29	2012	NE	032	1	4115	9740	0	0	0	15	0	0	5	1 0 1	301./107.	.01
86	7	5	1643	NE	035	1	4037	9750	0	0	0	9	0	0	1	0 0 1	279./101.	.00
86	7	24	1620	NE	039	1	4142	9745	0	0	0	6	0	0	5	1 0 1	310./125.	.00
86	9	5	1930	NE	049	1	4020	9819	0	0	0	15	0	0	1	1 0 1	273./123.	.01
86	9	18	2228	NE	054	1	4041	9816	0	0	1	12	0	0	4	2 1 1	279./121.	.02
*87	5	19	1920	IA	006	1	4042	9443	4042	9436	4	4	0	0	3	0 2 0	63./ 47.	.04
*87	5	20	2245	IA	008	1	4103	9500	4105	9456	4	6	0	0	5	1 2 1	34./ 51.	.05
*87	5	25	1544	IA	009	2	4113	9536	4145	9520	37	15	0	0	6	1 4 1	2./ 54.	1.06
*87	5	26	1515	IA	010	1	4045	9522	0	0	1	12	0	0	5	1 1 1	26./ 28.	.02
87	5	26	1525	IA	011	1	4127	9537	0	0	1	6	0	0	4	1 1 1	1./ 65.	.01
*87	5	26	1535	IA	012	1	4059	9507	0	0	0	6	0	0	4	0 0 1	32./ 45.	.00
*87	5	26	1630	IA	013	1	4119	9520	0	0	0	12	0	0	4	1 0 1	13./ 60.	.00
87	5	31	1444	IA	015	2	4129	9512	4128	9501	9	6	0	0	3	1 2 1	16./ 71.	.11
87	5	31	1540	IA	016	1	4144	9402	0	0	1	6	0	0	3	0 1 1	41./110.	.01
87	6	12	1450	IA	018	1	4150	9556	0	0	0	6	0	0	3	0 0 1	351./ 90.	.01
87	6	24	2044	IA	019	1	4104	9421	0	0	0	6	0	0	2	0 0 1	53./ 72.	.00
87	7	5	1720	IA	020	1	4210	9614	0	0	0	4	0	0	0	0 0 0	348./112.	.00
*87	7	8	2320	IA	025	1	4039	9509	0	0	1	7	0	0	4	1 1 1	31./ 29.	.01
87	7	18	1810	IA	030	1	4214	9606	0	0	0	4	0	0	1	0 0 0	350./115.	.00
87	5	18	1607	KS	004	1	3827	9623	3929	9621	2	90	0	0	6	2 2 3	19./119.	.39
87	5	15	1635	KS	005	1	3824	9615	0	0	0	15	0	0	5	1 2 1	194./121.	.01
*87	5	27	1451	KS	006	1	3943	9535	3949	9532	7	30	0	0	5	1 2 1	177./ 39.	.42
*87	3	27	1530	KS	007	1	3959	9521	0	0	1	30	0	0	5	1 2 2	177./ 39.	.42
87	6	22	1440	KS	011	1	3839	9624	0	0	0	15	0	0	5	1 1 2	149./ 25.	.05
87	6	27	2347	KS	014	1	3938	9755	3934	9743	11	30	0	0	0	0 0 1	199./109.	.01
87	6	28	20	KS	015	1	3921	9727	0	0	0	9	0	0	3	0 3 2	248./114.	.66
87	7	7	1900	KS	019	1	3859	9555	0	0	0	3	0	0	3	0 0 1	235./103.	.00
87	3	14	1715	NE	002	1	4012	9504	0	0	0	6	0	0	0	0 0 0	189./ 63.	.00
87	5	19	1830	NE	006	1	4037	9806	0	0	0	12	0	0	4	1 0 1	265./112.	.00
87	5	19	1935	NE	007	1	4048	9300	0	0	0	12	0	0	3	0 0 1	278./113.	.00
87	5	19	1950	NE	008	1	4135	9735	0	0	0	9	0	0	3	0 0 1	284./111.	.00
87	6	24	1820	NE	014	1	4041	9657	0	0	0	9	0	0	1	0 0 1	311./113.	.00
87	6	28	2045	NE	017	1	4023	9800	0	0	0	6	0	0	4	1 0 1	288./ 63.	.00
87	8	17	2130	NE	026	1	4009	9710	0	0	0	15	0	0	2	0 0 1	271./109.	.00
88	5	7	1945	IA	007	1	4103	9536	0	0	2	6	0	0	5	2 0 1	240./ 71.	.01
*88	5	7	2210	IA	008	1	4120	9557	4127	9549	10	22	0	0	3	0 1 1	1./102.	.02
88	5	8	1104	IA	009	3	4128	9322	4134	9314	6	9	0	0	6	2 2 2	346./ 61.	.44
88	5	8	1210	IA	010	1	4044	9319	0	0	2	9	0	0	5	1 3 1	37./122.	.12
88	5	5	1259	IA	011	4	4037	9320	4056	9227	35	13	0	0	5	1 1 1	78./105.	.03
*88	5	21	1206	IA	031	1	4036	9525	0	0	0	8	0	0	4	0 0 1	33./ 19.	.01

"*" before year means event ocurred within a 2 degree square centered on central point

08665 -0396

Tornadoes within 125. NM of BROWNSVILLE, NE

Yr	Mo	Day	Time (CST)	sta	Seq	Total # seq	Lat begin	Lon begin	Lat end	Lon end	Length miles	Width 10's ft	Deaths	Injuries	Damage Class	F	P	P	Azimuth	Area sq.mi
*83	7	15	1514	IA	035	1	4116	9552	0	0	2	50	0	42	7	2	1	2	349./ 56.	.15
*83	7	15	1516	IA	036	1	4116	9552	0	0	2	22	0	34	7	3	1	2	349./ 56.	.12
*83	7	15	1519	IA	035	1	4114	9555	4116	9552	3	22	0	12	7	1	1	2	346./ 55.	.14
88	7	15	1820	IA	036	1	4141	9446	0	0	0	4	0	0	4	0	0	0	26./ 89.	.00
*85	7	15	1845	IA	037	1	4115	9441	0	0	0	10	0	0	5	1	0	1	38./ 69.	.02
*83	8	22	300	IA	040	1	4059	9531	0	0	0	6	0	0	5	0	0	1	8./ 35.	.01
*83	8	22	1330	IA	041	1	4107	9450	4109	9445	4	15	0	0	5	1	2	1	38./ 59.	.14
83	11	15	1610	IA	042	2	4044	9307	4044	9304	2	3	0	0	2	0	1	0	79./117.	.01
83	11	15	1529	IA	043	1	4054	9302	4057	9258	4	18	0	4	5	2	2	2	74./122.	.17
88	3	24	1437	KS	001	1	3853	9459	0	0	0	7	0	0	3	0	0	1	180./ 85.	.00
89	7	9	1632	KS	013	1	3934	9759	0	0	0	6	0	0	3	0	0	1	247./118.	.01
88	7	15	1940	KS	015	1	3906	9710	0	0	0	6	0	0	2	0	0	1	224./104.	.01
88	7	15	1900	KS	016	1	3923	9658	0	0	0	6	0	0	2	0	0	1	227./ 85.	.01
88	11	15	1406	KS	021	1	3903	9541	3907	9536	6	21	0	22	6	2	2	1	182./ 78.	.26
88	11	15	1430	KS	022	1	3920	9551	0	0	0	6	0	0	2	0	0	1	175./ 61.	.00
*83	11	15	1445	KS	023	1	3931	9524	0	0	0	6	0	0	2	0	0	1	168./ 51.	.00
*88	11	15	1455	KS	024	1	3938	9521	0	0	0	12	0	0	4	1	0	1	153./ 45.	.01
*85	5	7	2152	NE	002	3	4107	9623	4112	9607	19	22	2	1	6	2	3	2	321./ 59.	.90
89	5	20	1520	NE	005	1	4146	9648	0	0	0	6	0	0	3	1	0	1	328./103.	.01
88	7	9	1130	NE	014	1	4120	9657	0	0	0	12	0	0	3	0	0	1	315./ 84.	.03
*54	-	5	1720	MO	001	2	4033	9523	4037	9515	7	270	0	2	5	4	1	4	43./ 17.	3.22
57	5	20	1917	KS	012	3	3827	9530	3859	9424	69	132	44	207	6	5	4	3	177./114.	17.41
60	4	15	1800	KS	036	2	3835	9439	3842	9432	8	132	0	2	5	3	2	3	136./116.	2.04
61	5	7	1645	KS	023	7	3910	9456	3917	9425	29	45	0	12	6	4	3	2	155./ 75.	2.43
*62	5	31	1345	KS	008	2	3954	9438	0	0	0	0	0	0	0	1	1	1	133./ 41.	.00
64	4	12	1630	KS	004	2	3914	9531	3923	9452	33	132	1	22	6	3	3	3	157./ 73.	3.27
*65	4	10	1640	KS	008	3	3925	9507	3940	9445	26	0	0	11	4	3	3	3	157./ 61.	.00
68	5	15	1445	KS	010	2	3838	9439	3838	9436	2	0	0	0	4	3	1	1	159./113.	.00
70	4	29	1430	MO	001	2	4025	9359	4037	9329	14	132	0	0	5	2	3	3	87./ 75.	1.71
*71	5	18	1435	KS	011	7	3921	9506	3952	9426	31	30	0	6	4	1	3	2	158./ 65.	.45
76	4	14	1530	KS	002	3	3946	9313	4003	9735	31	99	0	1	5	2	4	3	254./124.	5.82
*79	3	29	1800	MO	002	4	4029	9509	4042	9455	19	150	0	20	0	4	3	3	70./ 23.	5.42
*83	5	1	1415	NE	004	5	4043	9553	4059	9508	41	12	0	3	5	1	1	1	337./ 29.	.23
84	6	7	2058	MO	023	8	4025	9402	4135	9151	135	60	3	84	6	3	3	3	87./ 73.	15.76
86	6	17	1924	NE	042	2	4148	9613	4150	9557	13	9	0	0	5	1	3	1	343./ 91.	.24
86	9	18	1930	KS	052	3	3956	9759	4002	9755	7	150	0	7	6	2	2	1	257./111.	2.23

"*" before year means event occurred within a 2 degree square centered on central point

0 9 6 6 5 — 7 3 9 7

NPPI - SBO - 005

Tornadoes in 125. NM of BROWNSVILLE, NE

Path Width Scale × Path length scale (mi)

Path Width Scale	0	1	2	3	4	5	MSG	SUM
0:	180	155	42	11	1	0	5	394
1:	11	125	66	52	8	0	1	263
2:	13	88	53	49	8	1	3	215
3:	3	34	53	40	9	1	0	140
4:	0	7	5	10	5	0	0	27
5:	0	0	0	1	0	0	0	1
MSG:	41	149	14	6	0	0	106	316
SUM:	245	558	233	159	31	2	115	1356

F Scale × Path length scale (mi)

F Scale	0	1	2	3	4	5	MSG	SUM
0:	192	34	17	3	1	0	71	320
1:	145	122	71	29	4	0	95	459
2:	39	78	82	56	9	1	45	310
3:	2	11	25	29	9	0	0	76
4:	0	1	9	16	3	0	0	29
5:	0	0	0	2	1	0	1	4
MSG:	16	17	9	5	0	0	103	148
SUM:	394	263	215	140	27	1	316	1356

F Scale × Area scale (log10(area)+5.)

F Scale	1	2	3	4	5	6	7	8	9	10
0:	57	82	40	15	1	0	0	0	0	0
1:	13	80	112	80	14	0	0	0	0	0
2:	0	10	53	113	31	4	0	0	0	0
3:	0	0	3	19	29	8	0	0	0	0
4:	0	0	0	1	20	5	0	0	0	0
5:	0	0	0	0	0	3	0	0	0	0

F Scale × Path width scale (mi)

F Scale	0	1	2	3	4	5	MSG	SUM
0:	158	128	15	4	7	0	10	320
1:	68	237	84	41	5	0	34	469
2:	5	119	95	67	7	2	12	310
3:	0	10	23	33	10	0	0	76
4:	0	1	4	19	5	0	0	29
5:	0	0	1	1	2	0	0	4
MSG:	16	63	8	6	0	0	59	148
SUM:	245	558	233	169	31	2	115	1356

08665 - 9398

National Severe Storms Forecast Center

Kansas City MO 64106

Frequency Tables for Tornadoes within125.NM of BROWNSVILLE, NE   40.35 95.67

Distribution by month and date

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	SUM
JAN	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	[illegible]	0	0	0	0	0	6	0	0	0	0	0	0	0	7
FEB	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0			1
MAR	0	1	3	0	0	0	0	2	0	0	0	1	1	4	0	0	9	14	1	0	2	0	1	2	0	0	2	0	9	2	0	44
APR	0	7	9	6	5	0	4	1	0	9	3	9	10	3	6	14	1	2	15	12	11	14	12	0	6	17	6	12	3	5		201
MAY	8	5	0	31	10	17	20	12	14	16	9	8	7	3	17	9	3	1?	12	24	6	8	27	4	20	25	15	15	13	19	21	420
JUN	4	11	3	12	2	20	32	17	8	6	24	18	19	15	17	5	15	12	17	4	20	20	6	11	2	13	7	4	13	4		364
JUL	7	5	6	4	4	5	5	9	7	2	7	0	2	4	9	5	2	4	6	3	*	2	1	2	0	6	2	3	0	9	1	128
AUG	1	2	4	2	5	10	0	0	1	0	1	0	2	1	3	1	5	3	0	9	0	4	1	1	1	0	2	2	0	2	1	67
SEP	3	2	2	2	4	0	2	0	3	2	1	3	2	0	1	0	0	3	0	10	3	6	1	1	5	6	0	2	0	0		61
OCT	0	0	0	0	0	0	0	2	1	0	0	7	0	4	0	1	0	3	0	0	1	0	0	0	0	0	0	0	0	1	2	22
NOV	1	0	0	0	0	0	0	2	0	0	2	0	0	0	6	2	9	0	3	3	0	0	0	0	0	0	3	0	2	0		30
DEC	0	0	0	2	1	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	9

Date of initial touchdown using Central Standard Time

NPPI-580-005
[illegible]
3-31/86

08565 0399

National Severe Storms Forecast Center

Kansas City MO 64106

Frequency Tables for Tornadoes within125.NM of BROWNSVILLE, NE 40.35 95.63

Hourly Distribution - CST

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM	PCT	Mean Time
JAN	0	0	0	0	0	0	0	0	0	0	0	1	3	0	3	0	0	0	0	0	0	0	0	0	7	1.	1515
FEB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0.	1805
MAR	0	2	0	0	0	1	0	0	0	1	0	2	7	6	1	2	4	5	7	0	5	0	0	1	44	3.	1554
APR	1	2	2	3	0	0	0	1	1	2	0	3	1	10	14	12	27	29	35	29	3	11	8	4	203	15.	1739
MAY	4	5	5	3	0	2	3	1	2	2	1	4	9	23	34	40	45	47	52	62	20	26	21	5	420	31.	1748
JUN	4	7	3	7	2	3	4	2	0	0	0	5	6	11	15	23	35	34	57	56	40	30	11	9	364	27.	1737
JUL	4	6	6	2	2	1	0	2	1	[illegible]	[illegible]	3	2	2	7	10	18	18	11	9	8	5	8	3	129	9.	1831
AUG	1	0	0	3	0	0	1	1	[illegible]	[illegible]	0	1	0	3	1	4	6	14	12	7	4	5	2	2	67	5.	1824
SEP	0	2	2	1	1	0	0	0	3	[illegible]	0	1	1	1	1	6	8	10	8	4	3	2	2	4	61	4.	1859
OCT	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	3	5	2	4	2	2	0	0	0	22	2.	1712
NOV	2	0	0	0	0	0	0	0	0	1	2	3	0	2	5	1	5	[illegible]	1	2	1	0	1	1	30	2.	1549
DEC	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	2	9	1.	2242
SUM	16	27	18	20	5	7	8	7	7	7	3	23	30	59	87	101	154	163	189	171	97	80	53	34	1356	100.	1740
PCT	1.	2.	1.	1.	0.	1.	1.	1.	1.	1.	0.	2.	2.	4.	6.	7.	11.	12.	14.	13.	6.	5.	4.	3.	100.		

Hour of initial touchdown in Central Standard Time

3-22/86

08665 0200

Tornadoes within 125. NM of BROWNSVILLE, NE

Following for global area within 125. NM radius of 40.35 95.63

The average F-scale is 1.20 which corresponds to 81. mph.
The average PL-scale is 1.17885; The average PL type path length is 3.293; True average length is 5.172
The average PW-scale is 1.34166; The average PW type path width is .034; True average width is .078
The average area using average PL & PW computed by 10.**(.5*(pl*pw)-3.) is .019
The summation of the individual areas computed from PL & PW 245.06 divided by 1031 yields average area of .238
The average area scale is 3.67334; The average area scale type area is .043
The average length times the average width is .403
True average length = 5.17
True average width = .078
True average area = .835

	Probability =	.2652E-03 Mean Return Interval is	3770.94		
For winds exceeding 40 mph	prob =	.2652E-03 Mean Return Interval is	3770.94	based on	806 events
For winds exceeding 73 mph	prob =	.2524E-03 Mean Return Interval is	3911.26	based on	608 events
For winds exceeding 113 mph	prob =	.2354E-03 Mean Return Interval is	4247.38	based on	279 events
For winds exceeding 158 mph	prob =	.1611E-03 Mean Return Interval is	6205.38	based on	88 events
For winds exceeding 207 mph	prob =	.7385E-04 Mean Return Interval is	13541.75	based on	27 events
For winds exceeding 261 mph	prob =	.1538E-04 Mean Return Interval is	65012.53	based on	3 events

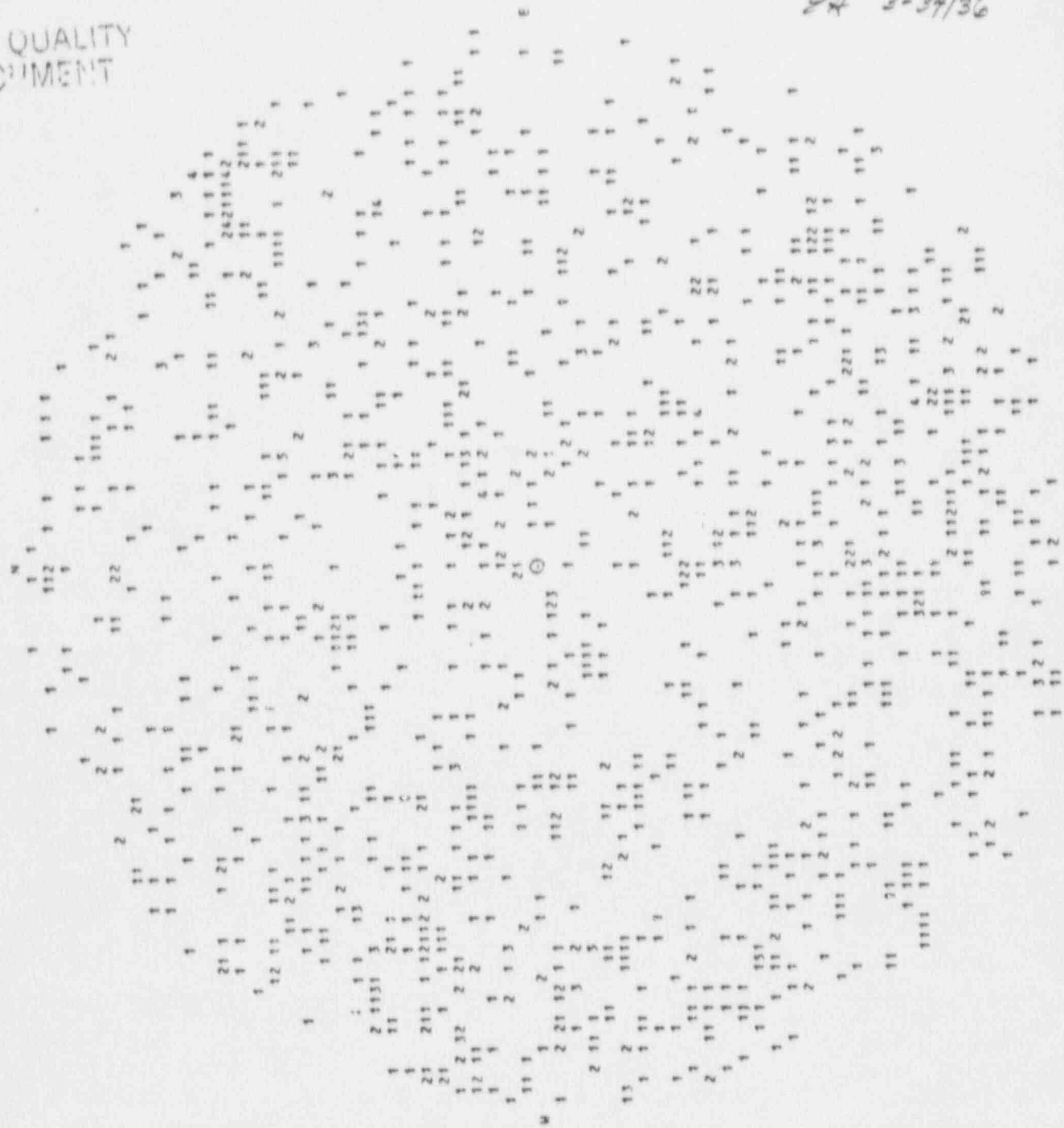
	F-0	F-1	F-2	F-3	F-4	F-5
Average PL length	.47	.98	2.25	5.13	7.28	14.49
Average PW width	.01	.01	.03	.06	.10	.22
Average PL & PW area	.01	.08	.35	.94	1.27	3.16
Average based on #	246.00	371.00	262.00	76.00	29.00	3.00
Average path length	1.14	2.80	7.04	16.20	20.15	37.64
Average path width	.02	.04	.10	.20	.27	.42
Average true area	.04	.22	.59	3.76	5.71	13.02
Average based on #	193.00	302.00	211.00	59.00	26.00	3.00

The following is for local area (two degrees square centered on latitude 40.35 longitude 95.63)
True average length = 5.16
True average width = .087
True average area = .858

	Probability =	.2630E-03 Mean Return Interval is	3802.37		
For winds exceeding 40 mph	prob =	.2630E-03 Mean Return Interval is	3802.37	based on	175 events
For winds exceeding 73 mph	prob =	.2592E-03 Mean Return Interval is	3858.15	based on	138 events
For winds exceeding 113 mph	prob =	.2357E-03 Mean Return Interval is	4243.05	based on	68 events
For winds exceeding 158 mph	prob =	.1464E-03 Mean Return Interval is	6829.97	based on	24 events
For winds exceeding 207 mph	prob =	.3445E-04 Mean Return Interval is	29025.31	based on	7 events
For winds exceeding 261 mph	prob =	.0000E+00 Mean Return Interval is	*********	based on	0 events

NPP1-SB0-005
E7L 3-33/36

NPPM - SBO - 005
EH 3-34/36



08665 0902

```
1 1   1   111       1
        1
         5

Tornado plots within 125. NM of BROWNSVILLE, NE                         Total   1114
                                       Total may differ from path length & path width
                               matrix because not all events have PL & PW scale recorded

                                              40.35  95.63
```

NPP1-580-005
.35/36

08665 9903

GRENIER

DEST=GRENIER USER=VERF QUEUE=LPT DEVICE=@LPT

PAGES=36

PATH=:UDD:TOU:BEVERLY:TORPLOT

END

USSFC /STSB/ Kansas City MO

AOS/VS II RELEASE 1.00.00.00
AOS/VS II XLPT-32 REVISION 1.00.00.00

NPPI-580-005
EAL
3-36/36

ENERCON SERVICES, INC.

SHEET 4-1 OF 7

JOB NO. NP-108 DATE 6/12/89

PROJECT SBO

SUBJECT COOPER SITE SPECIFIC WEATHER DATA

CLIENT NPPD ORIGINATOR E Zebroski

REVIEWER [illegible] 7/11/89 APPROVED

CALCULATION NO. NPPI-SBO-005

ATTACHMENT 4

EXCERPTS FROM NUMARC 87-00

4-2/7

NPP1-580-005

Table 3-3

SEVERE WEATHER DATA[b]

SITE	SNOWFALL (h1)	TORNADO (h2)	STORMS (h3)	SALT SPRAY (h4)	SITE	SNOWFALL (h1)	TORNADO (h2)	STORMS (h3)	SALT SPRAY (h4)
ARKANSAS NUCLEAR ONE	6	[illegible]	0.067	0	MONTICELLO	46	[illegible]	0.08	0
ARNOLD	33	[illegible]	0.25	0	NINE MILE POINT	99	[illegible]	0.06	0
BEAVER VALLEY	45	[illegible]	0.03	0	NORTH ANNA	15	[illegible]	0.08	0
BELLEFONTE	4	[illegible]	0.029	0	OCONEE	6	[illegible]	0.12	0
BIG ROCK POINT	97	[illegible]	0.036	0	OYSTER CREEK	27	[illegible]	0.048	0
BRAIDWOOD	40	[illegible]	0.10	0	PALISADES	48	[illegible]	0.1	0
BROWNS FERRY	4	[illegible]	0.029	0	PALO VERDE	0	[illegible]	0.125	0
BRUNSWICK	2	[illegible]	0.12	0	PEACH BOTTOM	22	[illegible]	0.026	0
BYRON	35	[illegible]	0.08	0	PERRY	38	[illegible]	0.08	0
CALLAWAY	24	[illegible]	0.05	0	PILGRIM	42	[illegible]	0	0.08
CALVERT CLIFFS	9	[illegible]	0.061	0	POINT BEACH	42	[illegible]	0.1	0
CATAWBA	6	[illegible]	0.12	0	PRAIRIE ISLAND	46	[illegible]	0.08	0
CLINTON	34	[illegible]	0.1	0	QUAD CITIES	40	[illegible]	0.15	0
COMANCHE PEAK	4	[illegible]	0.05	0	RANCHO SECO	0	[illegible]	0.1	0
COOK	46	[illegible]	0.1	0	RIVER BEND	0	[illegible]	0.09	0
COOPER	30	[illegible]	0.1	0	ROBINSON	1	[illegible]	0.09	0
CRYSTAL RIVER	0	[illegible]	0.1	0	SALEM	22	[illegible]	0.045	0
DAVIS-BESSE	38	[illegible]	0.11	0	SAN ONOFRE	0	[illegible]	0.005	0
DIABLO CANYON		[illegible]	0.07	0	SEABROOK	63	[illegible]	0.045	0
DRESDEN	40	[illegible]	0.03	0	SEQUOYAH	4	[illegible]	0.1	0
FARLEY	0	[illegible]	0.05	0	SHOREHAM	26	[illegible]	0.08	0
FERMI	32	[illegible]	0.05	0	SOUTH TEXAS	0	[illegible]	0.12	0
FITZPATRICK	80	[illegible]	0.06	0	ST LUCIE	0	[illegible]	0.15	0
FORT CALHOUN	29	[illegible]	0.5	0	SUMMER	2	[illegible]	0.12	0
FORT ST. VRAIN	39	[illegible]	0.02	0	SURRY	8	[illegible]	0.1	0
GINNA	80	[illegible]	0.06	0	SUSQUEHANNA	64	[illegible]	0.038	0
GRAND GULF	1	[illegible]	0.08	0	THREE MILE ISLAND	35	[illegible]	0.027	0
HADDAM NECK	27	[illegible]	0.08	0	TROJAN	7	[illegible]	0.14	0
HARRIS	1	[illegible]	0.13	0	TURKEY POINT	0	[illegible]	0.18	0
HATCH	0	[illegible]	0.02	0	VERMONT YANKEE	79	[illegible]	0.04	0
HOPE CREEK	22	[illegible]	0.045	0	VOGTLE	2	[illegible]	0.022	0
INDIAN POINT	29	[illegible]	0.02	0	WATERFORD	0	[illegible]	0.09	0
KEWAUNEE	43	[illegible]	0.1	0	WATTS BAR	10	[illegible]	0.1	0
LASALLE	40	[illegible]	0.08	0	WNP-2	15	[illegible]	0.05	0
LIMERICK	23	[illegible]	0.027	0	WOLF CREEK	20	[illegible]	0.23	0
MAINE YANKEE	74	[illegible]	0.094	0	YANKEE ROWE	79	[illegible]	0.048	0
MCGUIRE	6	[illegible]	0.08	0	ZION	40	[illegible]	0.08	0
MILLSTONE	27	[illegible]	0	0.18					

NOTE (b): NRC STAFF PROVIDED THE DATA IN TABLE 3-3 USING CLIMATOLOGICAL SOURCES CITED IN THE REFERENCES TO THIS PROCEDURE. NUMARC HAS NOT VERIFIED THE ACCURACY OF THIS DATA.

Part 1C: Determine the Estimated Frequency of Loss of Off-site Power Due to Sever Weather (SW Group)

Four factors are used to calculate the estimated frequency of loss of off-site power due to severe weather:

(1) *Annual expectation of snowfall for the site, in inches [h_1];*

(2) *Annual expectation of tornadoes of severity f2 or greater at the site (i.e., windspeeds greater than or equal to 113 miles per hour), in events per square mile [h_2];*

(3) *Annual expectation of storms for the site with wind velocities between 75 and 124 mph [h_3]; and,*

(4) *Annual expectation of storms with significant salt spray for the site [h_4].*

These factors are combined in the following relationship to yield the estimated frequency of loss of off-site power due to severe weather:

$$f = (1.3 \times 10^{-4}) * h_1 + b * h_2 + (1.2 \times 10^{-2}) h_3 + c * h_4$$

where:

b	=	*12.5 for sites with multiple rights of way*
b	=	*72.3 for sites with a single right of way*
c	=	*0.78 if site is vulnerable to effects of salt spray*
c	=	*0 for other sites*

Sites which are determined to be susceptible to the effects of salt spray may remedy this situation through design o procedures to minimize the loss of off-site power.

Table 3-4

SEVERE WEATHER GROUPS (SW)

SW GROUP	ESTIMATED FREQUENCY OF LOSS OF OFFSITE POWER
1	$f < 0.0033$
2	$0.0033 \le f < 0.0100$
3	$0.0100 \le f < 0.0330$
4	$0.0330 \le f < 0.100$
5	$0.10 \le f$

Part 1D: Evaluate Independence of Off-site Power System (I Group)

The potential for long duration loss of off-site power events can have a significant impact on station blackout risk and required coping durations. Long duration LOOP events are associated with grid failures due to severe weather conditions or unique transmission system features. Shorter duration LOOP events tend to be associated with specific switchyard features. Two features, in particular, are of special importance: (1) the independence of the off-site power sources constituting the preferred power supply to the shutdown buses on-site, and (2) the power transfer schemes when the normal source of AC power is lost.

Two plant groupings are specified in this part for classifying the interface of the preferred power supply to the safe shutdown bus: I1/2 and I3. The I1/2 group is characterized by features associated with greater independence and redundancy of sources, and a more desirable transfer scheme. I3 sites have simpler, less desirable off-site power systems and switchyard capabilities. The importance of the site groupings becomes evident when combined with the potential for losing off-site power due to severe and extremely severe weather.

4-5/7
NPP1-5B0-005
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POOR QUALITY DOCUMENT

Part 1.B: Estimated Frequency of Loss of Off-site Power Due to Extremely Severe Weather (ESW Group)

The estimated frequency of loss of off-site power due to extremely severe weather is determined by the annual expectation of storms at the site with wind velocities greater than or equal to 125 mph. These events are normally associated with the occurrence of great hurricanes where high windspeeds may cause widespread transmission system unavailability for extended periods. Since electrical distribution systems are not designed for these conditions, it is assumed that the occurrence of such windspeeds will directly result in the loss of off-site power.

USE METHOD "A" OR "B" BELOW TO DETERMINE THE ESTIMATED FREQUENCY OF LOSS OF OFF-SITE POWER DUE TO EXTREMELY SEVERE WEATHER AT THE SITE AND SELECT AN ESW GROUP:

A. Site-specific data provides the most accurate source for calculating the annual frequency of storms with wind velocities greater than or equal to 125 mph, and can be used in calculating the estimated frequency of loss of off-site power due to extremely severe weather.

Once the frequency (e) is calculated, use Table 3-1 to assign the site to an ESW Group.

Table 3-1

EXTREMELY SEVERE WEATHER GROUPS (ESW)

ESW GROUP	ANNUAL WINDSPEED EXPECTATION $\geq$ 125 MPH
1	$e < 3.3 \times 10^{-4}$
2	$3.3 \times 10^{-4} \leq e < 1 \times 10^{-3}$
3	$1 \times 10^{-3} \leq e < 3.3 \times 10^{-3}$
4	$3.3 \times 10^{-3} \leq e < 1 \times 10^{-2}$
5	$1 \times 10^{-2} \leq e$

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8-24

USE THE FOLLOWING TABLES TO DETERMINE THE OFF-SITE POWER DESIGN CHARACTERISTIC GROUP.

OFF-SITE POWER DESIGN CHARACTERISTIC GROUP MATRIX

L1/2 SITES

SWGROUP \ ESW GROUP	1	2	3	4	5
1	P1	P1	P1	P1	P1
2	P1	P1 (1)	P1	P1	P1
3	P1	P1	P1	P1	P1
4	P1	P1	P1	P1	P1
5	P1	P1	P1	P1	P1

Table 3-5a

L3 SITES

SWGROUP \ ESW GROUP	1	2	3	4	5
1	P1	P1	P1	P1	P1
2	P1	P1	P1	P1	P1
3	P1	P1	P1	P1	P1
4	P1	P1	P1	P1	P1
5	P1	P1	P1	P1	P1

Table 3-6a

NOTE: Coastal plants are susceptible to long duration LOOPS as a result of extremely severe weather associated with hurricanes. As a result, plants with otherwise sufficient EDG reliability and configuration and lower susceptibility to severe weather events may be in a higher coping duration category solely due to the probability of a hurricane induced LOOP.

B. IF A PLANT IS SUSCEPTIBLE TO A HURRICANE INDUCED LOOP AND HAS HURRICANE RESPONSE PROCEDURES WHICH MEET THE GUIDELINES OF SECTION 4.2.3 OF THIS DOCUMENT, USE THE FOLLOWING TABLES TO DETERMINE THE OFF-SITE POWER DESIGN CHARACTERISTIC GROUP.

(1) Changed to P1 per NUMARC 87-00 Errata, Item 6, dated October 1988.

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POOR QUALITY DOCUMENT

3.2.5 Step Five: Determine Coping Duration Category

USE THE TABLE PROVIDED BELOW TO DETERMINE THE COPING DURATION REQUIREMENT IN HOURS:

Table 3-8

OFFSITE POWER GROUP (From Section 3.2.1)	EAC GROUP (From Section 3.2.2)	ALLOWED EDG TARGET RELIABILITY (Per Demand) (From Section 3.2.4)	REQUIRED COPING DURATION CATEGORY
P1	A	0.950	2
P1	B	0.950	4
P1	C	0.950	4
P1	D	0.975	4
P2	A	0.950	4
P2	B	0.950	4
P2	C	0.975	4
P2	C	0.950	8
P2*	C	0.950	4
P2	D	0.975	8
P2*	D	0.975	4
P3	A	0.975	4
P3	A	0.950	8
P3*	A	0.950	4
P3	B	0.975	4
P3	B	0.950	8
P3*	B	0.950	4
P3	C	0.975	8
P3*	C	0.975	4
P3	C	0.950	16
P3*	C	0.950	8
P3	D	0.975	8
P3*	D	0.975	8 4

* Denotes site upgrade attributable to implementation of plant specific pre-hurricane shutdown requirements and procedures which provide an enhanced coping capability under anticipated hurricane conditions.

3.2.6 Required Action

Step Five (Section 3.2.5) yields one of the four coping duration categories discussed in the NRC Station Blackout Regulatory Guide 1.155: two hours, four hours, eight hours, or 16-hours. Plants in the eight and 16-hour categories should undertake actions to reduce risk consistent with NUMARC Station Blackout Initiative 1.

THE FOLLOWING COURSES OF ACTION ARE AVAILABLE TO REDUCE THE ASSESSED RISK OF

N131-0687

Nebraska Public Power District

DESIGN CALCULATIONS COVER SHEET

Title: Review of NPP1-SBO-005, Rev. 1 by ENERCON - CNS Site Specific Weather	Calculation No.: 89-1924
	Supersedes Calc. No.: NA
System/Structure: NA	Task Identification No.: NA
Component: NA	Design Change No: NA
Classification: ☒ Essential ☐ Non-Essential	Discipline: Electrical
	*ASME Stress reports shall be approved by Registered P.E.

NPPD Generated Calculation

Prepared By: B. Date:

Checked By: Date:

Approved By: Date:

Third Party Review Req'd. Yes/No:

Non NPPD Generated Calculation

Companies Name: ENERCON Date: 7-12-89

NPPD Reviewed By: J. Hoehner Date: 10-16-89

NPPD Approval: W.C. Fanchi Date: 10-17-89

Calc. Description:

This NEDC applies CNS site-specific weather data to determine a more realistic severe weather (SW) and extremely severe weather (ESW) g[illegible]s categorizations which will directly affect the EDG target reliability.

Design Basis or References:

1. USAR Vol. I, II.3.0

2. TECH. SPECS. NA

Attachments:

A. NPP1-SBO-005

B.

Rev. No.	Revision Description	Prepared By	Checked By	Approved *By	Date

NON-NPPD GENERATED CALCULATION:

PREPARED BY: ENERCON DATE: 7-17-89

CHECKED BY: J. Hackney DATE: 10-16-89

NEDC 89-1924 "REVIEW OF NPP1-SBO-005, REV.1"

A. PURPOSE

This NEDC applies CNS site-specific weather data to determine a more realistic severe weather (SW) and extremely severe weather (ESW) group categorizations which will directly affect the EDG target reliability value. This calculation is part of the Attachment (specifically Appendix A) to the ENERCON Letter WMD-89-075, dated July 14, 1989 on the CNS Site-Specific Weather Data Evaluation for SBO. This Calculation will determine the value of h_2 "annual number of tornadoes with windspeeds $\geq$113 mph and of h_3 "annual number of storms with windspeeds between 75 and 125 mph which will be used as input for NEDC 89-1923.

B. REQUIREMENTS

1. Wind speed data for CNS from 1975 through 1987 as detailed in Attachment 1 of the calculation.

2. Tornado occurrence within 125 miles of CNS listing complied by the National Severe Storm Forecast Center (NSSFC) in Kansas City. This is detailed as Attachment 3 of the calculation.

3. From the NSSFC summation sheet (page 13 of 18 of the calculation), the probability in the local area (as defined on same page) is 2.357E-05 /yr, which is the value used for h_2.

C. ASSUMPTIONS

1. The data provided by the NSSFC is assumed to be correct and the computer calculations provided are performed correctly.

2. The wind speed data provided to ENERCON by NPPD is correct.

D. METHODOLOGY

1. The wind speed at alternate elevations is determined by equation 2.4.1 of Attachment 2 of this calculation.

2. The determination of the probability of the hourly average wind speed exceeding 45 mph at the 30 meter

NON-NPPD GENERATED CALCULATION:

PREPARED BY: ENERCON DATE: 7-13-89

CHECKED BY: J. Hocking DATE: 10-16-89

elevation is 0.0769 as calculated by using actual 10 meter data (converted to 30 meter data) and calculating a straight probability which is conservative. Therefore h_3 = 0.0769.

E. CONCLUSION

1. The CNS site specific value for h_2 is 0.0002357.
2. The CNS site specific value for h_3 is 0.0769.
3. This information will be used as input into NEDC 89-1923.
4. Although this calculation does duplicate calculations included in NEDC 89-1923, the above results will be considered the only conclusions of this NEDC.