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10 May 1978

Dr. John Kelleher
Geosciences Branch
Division of Site Safety and
Environmental Analysis
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear John,

In response to your request I am enclosing the following material:

1) Table listing the locations of earthquakes in Fig. 2 of our Science paper. Earthquakes and their magnitudes used in Fig. 4 (the regress curve) are indicated by X's in this table.

2) Magnitude-Intensity relationship curve (Reference 19, in preparation)

3) A b-value plot for recent earthquakes in N.Y. State and adjacent area

As far as Reference 10 is concerned, one paper is in preparation. I do not as yet have a preprint. A copy of the Annual Technical Report to NYSERDA and NRC is available at NRC (ask Jerry Harbour).

An estimate of the total length of the major NE trending faults in southeastern N.Y. and northern N.J. was obtained from Fig. 2 of our paper. Note that it is a very rough estimate and that we consider the probability calculation made by this method (method 2 in our paper) to be a crude estimate. We take the rupture length for an intensity VII earthquake to be about 5 km and hence four rupture zones along the Ramapo fault can be considered to be within 10 km of the site.

If you have any further questions, please feel free to call.

Best regards,

Yash Aggarwal

YA/llm
Encls.

Sorry for the delay. I was out of town.

B/1

following velocity model was used to locate these events. A velocity of 4.5km/s was used for the Triassic where appropr

	km/s	Depth
	5.98	0
P velocity	6.6	7.5 $v_p/v_s = 1.73$
	8.1	35.

Center No.	Date	Lat. (North) Deg Min.	Long. (West) Deg Min	Depth km	ERH km	ERZ km	Magnitude	Locality
1	20 Dec. 1962	40 59.2	74 19.7	6.4	0.7	1.0	2.9	Pompton Lakes, N.
2	30 Nov. 1964	41 12.7	73 57.2	7.4	0.2	0.3	1	Bowling Point, N
3.	21 May 1966	41 08.6	74 02.0	10.2	1.1	2.0	1 - 1.5	Summit Park, NY
4.	6 Oct 1969	40 57.3	74 38.2	0	1.6	--	1.25	Lake Hopatcong,
5.	8 Apr. 1974	41 13.1	73 59.5	1	1.2	1.5	2.1	Stony Point, NY
6.	7 June 1974	41 37.0	73 56.3	0	0.8	1.5	3.3	Wappingers Falls.
7	29 Apr 1975	41 35.3	73 52.8	0	1.7	3.9	2.3	Wappingers Falls.
8.	15 June 1975	41 37.0	73 56.2	0	1.1	2.8	2	Wappingers Falls.
9.	19 July 1975	41 25.5	73 47.4	3	0.9	1.3	2.3	Mahopac, NY
10	22 Aug. 1975	41 08.6	73 57.0	3	0.4	0.7	2.3	Lake De Forest,
11.	24 Oct. 1975	41 37.1	73 56.3	0	1.4	2.5	2	Wappingers Falls.
12.	10 Nov. 1975	41 03.6	74 19.1	6.5	0.4	0.3	1.5	Wanaque Reservoi
13.	6 Mar. 1976	41 10.1	73 48.8	9.2	0.5	1.0	1	Ossining, NY
14.	11 Mar. 1976	40 57.1	74 21.2	0	0.9	1.7	2.5 - 2.8	Pompton Lakes, N.
15.	12 Mar. 1976	40 57.2	74 21.4	4.6	1.1	0.7	1.8	Pompton Lakes, N.
16.	13 Apr. 1976	40 50.1	74 02.9	2.5	1.2	1.4	3	Ridgefield, NJ

Epicenter No. on Fig. 2	Date	Lat. (North) Deg Min.	Long. (West) Deg Min.	Depth km	ERH km	ERZ km	Magnitude	Locality
17.	20 Aug. 1976	41 07.4	73 45.5	* 5.3	0.7	≤2 0.8	2.5	Mount Pleasant
18.	22 Sep. 1976 x	41 17.1	73 57.1	* 7.9	0.1	≤1 0.1	1.8	Indian Point,
19.	28 Oct. 1976	40 53.6	74 29.3	0	0.7	≤5 --	~1	Denville, NJ (three event
20.	22 Nov. 1976	40 59.8	73 51.5	* 5	0.4	≤1 0.3	1.9	Scarsdale, NY
21.	5 Dec. 1976	40 46.1	74 45.6	3	--	≤2 --	1.8	Schooleys Mtn.
22.	7 Dec. 1976	40 46.1	74 45.7	5	--	≤2 --	1.7	Schooleys Mtn
5	15 Feb 1972	41 16.27	73 36.16	* 6	1.1	≤2 0.7		near Ward P. Bridge
12	17 Jan 76 x	40 58 85	74 23 45	4.2	2.1	≤5 1.2	2.1	Riverside N
22'	7 Jan 77	41 01.26	74 30 23	18.8	2.3	≤5 0.9	~1	Green Po
23	10 March 77	41 10.94	74 08.88	* 6	0.7	≤2 0.5	2.2	Suffern N
24	10 June 77	40 41.97	74 53.32	5.7	1.6	≤5 1.9	1.1	High Bridg
25	12 July 77	40 42.22	74 56.12	7.3	1.0	≤5 10.4	2.3	Hampton
26	17 Sept 1977	41 12.07	74 03.36	* 0.97	0.5	≤1 0.4	~1	Hamburg N
27	22 Sept 1977	41 18.8	75 55.4	* 2.4	0.4	≤ 0.4	2.4	Peekskill N
27'	29 Sept. 1977	41 18.71	73 55.58	* 2.46	0.3	≤1 0.7	~1	Peekskill
28	14 Oct 1977	41 33.53	73 51.18	0.0	0.9	≤2 1.5	2.2	north of Newburg
29	27 Nov 1977 x	41 04 89	74 12.91	* 5.8	0.4	≤2 0.5	1.8	Oakland N. J.

* = reliable depths (others not reliable)

(1) Note we did not use aftershocks (for example ... in the regression curve.

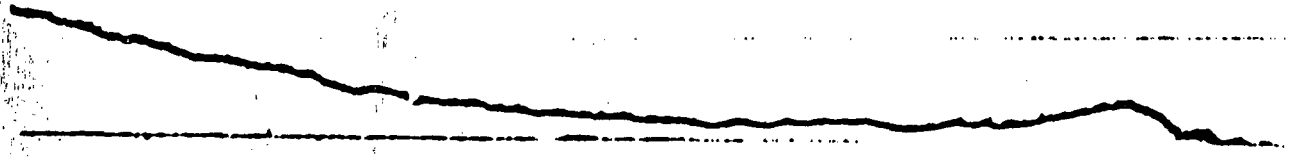
(2) The earthquakes used in the regression curve are underlined

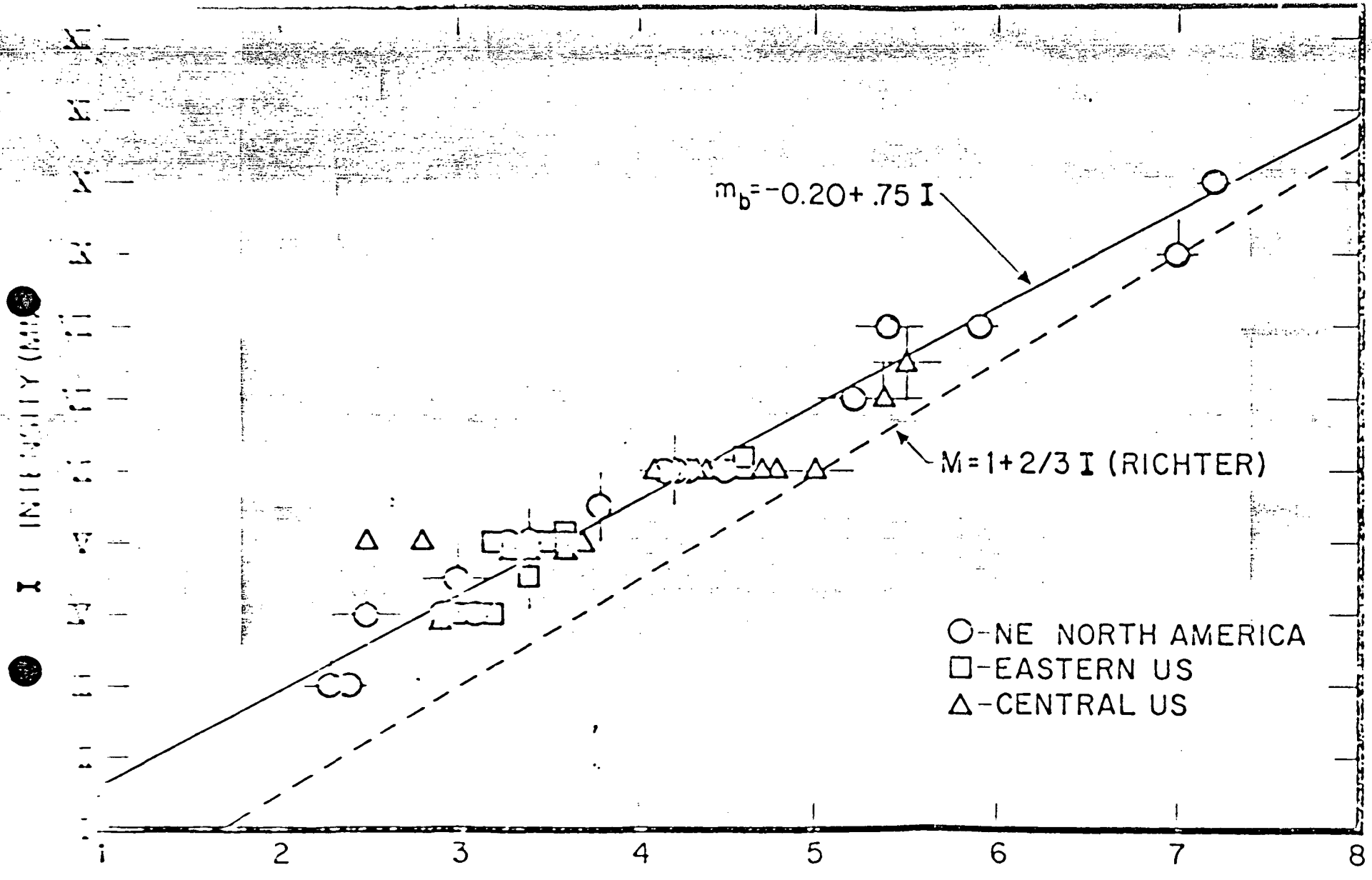
(3) The m_b for event # 14 is 2.5 it and I took it to be greater than and started the regression plot with

(4) m_b's are rounded:

(5) In the equation ~~$\log_{10} N = 1.7 - 0.43$~~ standard deviation (95% confidence) is obtained

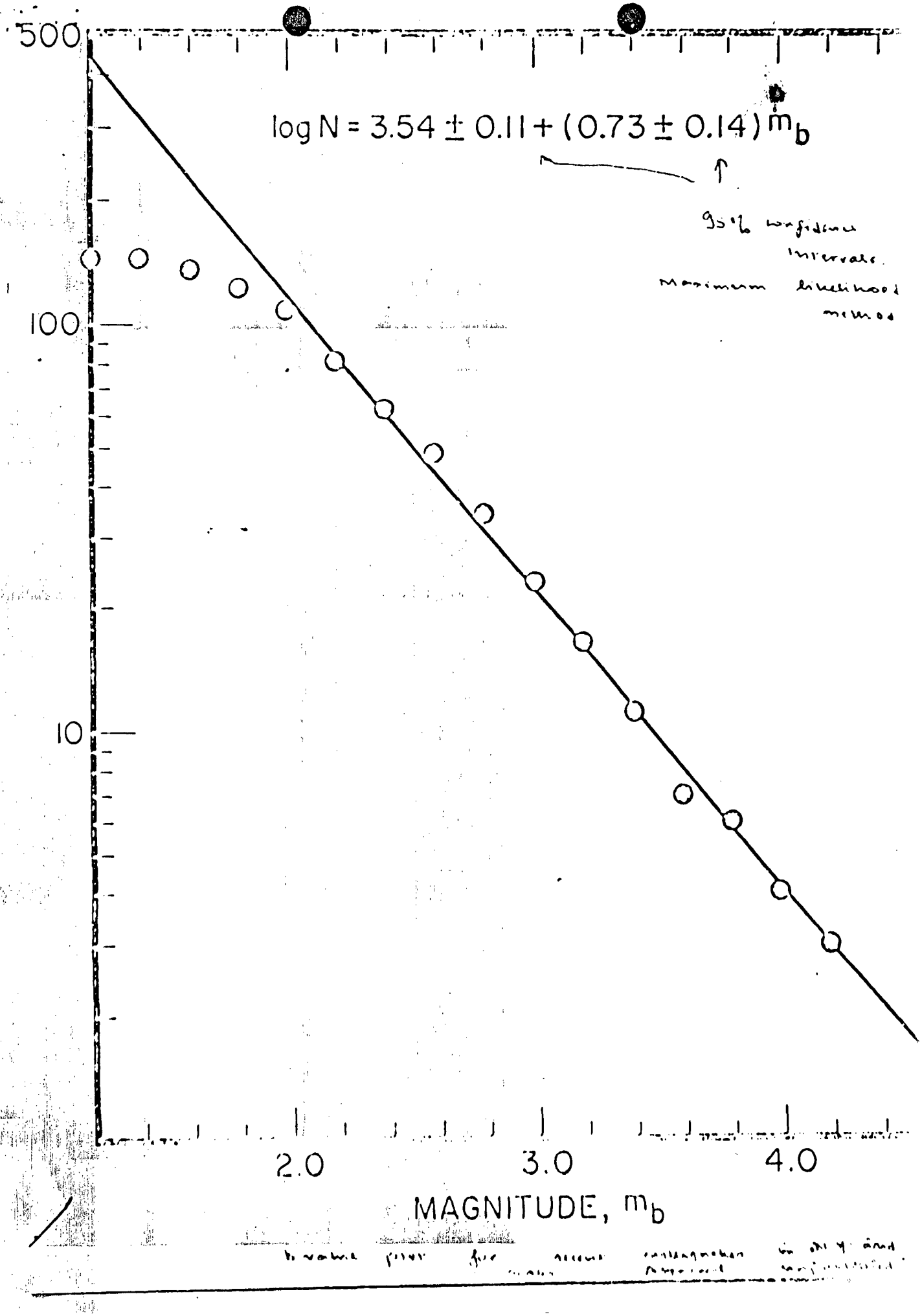
(5) The solid line Fig 4 was obtained by least squares fit through the only. the 95% confidence of 0.13 in the 'a' value, which was obtained by using both the triangles





m_b = mbLg

Magnitude - Intensity relationship (unpublished suggested)


500
100
10
log N = 3.54 ± 0.11 + (0.73 ± 0.14) m_b
95% confidence intervals. Maximum likelihood method
2.0
3.0
4.0
MAGNITUDE, m_b