



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

W. Kane

10

MAR 03 1982

MEMORANDUM FOR: Darrell G. Eisenhut, Director  
Division of Licensing

FROM: Richard H. Vollmer, Director  
Division of Engineering

SUBJECT: RECOMMENDATION OF ASLB BOARD NOTIFICATION ITEM -  
POSSIBLE CHANGE OF POSITION BY U. S. GEOLOGICAL SURVEY  
ON THE LOCALIZATION OF THE 1886 CHARLESTON EARTHQUAKE -  
VIRGIL C. SUMMER NUCLEAR PLANT SITE

The Extreme External Phenomena Subcommittee of the ACRS sponsored a two day meeting (Jan. 28-29, 1982) to hear presentations by prominent earth scientists throughout the U. S. who are engaged in seismic and geologic research. During the seminar much time was spent discussing the geology and seismicity of the Charleston, South Carolina region. In past licensing decisions, the NRC has assumed, based primarily on recommendations from the U. S. Geological Survey (USGS), that the relatively high seismicity in the Charleston, S.C. area, including the 1886 Intensity X Charleston Earthquake would not recur anywhere but the Charleston area.

Geologic and seismic research, funded by the NRC and carried out by the USGS, has been ongoing in the Charleston area since 1973. In reviewing the V. C. Summer OL SAR, the NRC staff and the USGS considered all of the information available at that time and reaffirmed our original CP SER conclusion.

No significant new information was presented at the ACRS Subcommittee meeting that was not considered in the Summer evaluation, but the USGS stated that it was reviewing its position on the Charleston earthquake. The USGS review could result in one of the following three positions or some other alternative: (1) A Charleston-type event could only occur in the Charleston area - a reconfirmation of their past position; (2) A Charleston-type event is more likely to occur at Charleston than elsewhere, but is not unique to the Charleston area; (3) A Charleston-type event could occur throughout the eastern Seaboard as there is nothing unique to the Charleston area.

The NRC still supports its position stated in the V. C. Summer SER pending any new position statement by the USGS which we expect to receive in the future.

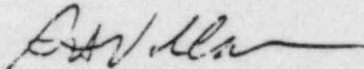
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PDR FOIA  
BELL84-430 PDR

Darrell G. Eisenhut

- 2 -

MAR 03 1982

A more detailed discussion of the NRC staff position on this matter is presented in Commission Paper (SECY-82-53), a copy of which is attached. We will notify you immediately upon receipt of the USGS position. Since this issue appears to meet the guidelines of Office Letter No. 19, we recommend that you consider notifying the ASLB for the Summer site of this new information.

  
Richard H. Vollmer, Director  
Division of Engineering

Enclosure:  
As stated

cc w/encl:  
H. Denton  
J. Knight  
R. Tedesco  
A. Schwencer  
R. Jackson  
S. Brocoun  
L. Reiter  
S. Goldberg  
W. Kane  
R. McMullen  
P. Sobel  
E. Case

February 5, 1982



SECY-82-53

## POLICY ISSUE (Information)

FOR: The Commissioners

FROM: Executive Director for Operations

SUBJECT: POSSIBLE RELOCATION OF DESIGN CONTROLLING EARTHQUAKES IN THE EASTERN U.S.

PURPOSE: To provide the Commissioners with information relating to (1) possible modification of the U.S. Geological Survey position on the association of the 1886 Charleston, S.C. earthquake with geologic structure, and (2) the recent earthquakes in New Brunswick, Canada.

DISCUSSION: In the licensing of facilities in the Southeastern U.S., the NRC has maintained the position, based on the advice of the U.S. Geological Survey (USGS), that any reoccurrence of the 1886 Charleston, S.C. earthquake (Modified Mercalli Intensity (MMI) X, estimated Magnitude about 7) would be confined to the Charleston area. That is, the Charleston earthquake is assumed to be associated with a geologic structure in the Charleston area. Nuclear power plants in the region east of the Appalachian Mountains are, therefore, usually controlled in their seismic design, according to Appendix A to 10 CFR Part 100, by the maximum historical earthquake not associated with a geologic structure. This controlling earthquake is typically an MMI VII or VIII. Since 1974, the NRC has funded an extensive research project in the Charleston area to gain further information on the causative mechanism of this event.

On January 28 and 29, the Extreme External Phenomenon Subcommittee of the ACRS convened a meeting of expert professionals in the geosciences to obtain an overview of the state of knowledge and future NRC research needs. During that meeting, we were informed by the

Contact:  
R. Vollmer, NRR  
492-7207

8203650077



USGS that they had formed a working group to reassess the validity of their position on the Charleston earthquake. They indicated that their tentative position concluded that the reoccurrence of a Charleston-type earthquake should not be considered unique to the Charleston area. It was further indicated their recommendation would be forwarded to the USGS Director in approximately one month and that a policy decision on the treatment of the Charleston earthquake would be made at the Director's level.

Any major modification of the former USGS position could have significant impact on many Eastern US nuclear plant sites because Appendix A to 10 CFR Part 100 could require an earthquake of this type, with its resulting high ground motion, to be assumed to occur at any location.

A meeting between the EDO and the Director, USGS, on licensing issues is planned for the near future. Further information may be available at that time.

#### New Brunswick, Canada, Earthquakes

On January 9-11, 1982, a series of earthquakes occurred in New Brunswick, Canada. The largest of these events was a Magnitude 5.7 earthquake which occurred on January 9, 1982. Because of its remote location, no damage was associated with this earthquake. In the past, however, events of such size have resulted in MMI VIII. Although all information relating to the size and location of this event is preliminary, it eventually may be concluded that this earthquake could have occurred anywhere within the New England Piedmont Tectonic Province and, in accordance with the Appendix A to 10 CFR Part 100, would represent the largest historical earthquake in that province. The previous historical maximum earthquake is MMI VII. This could result in an increase in the size of the controlling earthquake and, therefore, the assumed earthquake ground motion and Safe Shutdown Earthquake for nuclear power plant sites in this region which includes much of New England and southern New York.

The historical 1755 MMI VIII Cape Ann earthquake, currently used in the design of Seabrook, is related to a different tectonic province within the White Mountain region of New England.

A handwritten signature in dark ink, appearing to read 'W. J. Dircks', written in a cursive style.

William J. Dircks  
Executive Director for Operations



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MAR 18 1982

Docket No.: 50-395

MEMORANDUM FOR: Atomic Safety and Licensing Board for Virgil C. Summer  
Nuclear Station, Unit No. 1

FROM: Robert L. Tedesco, Assistant Director for Licensing, DL

SUBJECT: BOARD NOTIFICATION - POSSIBLE CHANGE OF POSITION BY U. S.  
GEOLOGICAL SURVEY ON THE LOCALIZATION OF THE 1886  
CHARLESTON, S. C. EARTHQUAKE (BN NO. 82-22)

The Extreme External Phenomena Subcommittee of the Advisory Committee on Reactor Safeguards (ACRS) sponsored a two day meeting held on January 28-29, 1982 to hear presentations by prominent earth scientists throughout the U. S. who are engaged in seismic and geologic research. During the seminar much time was spent discussing the geology and seismicity of the Charleston, South Carolina region. In past licensing decisions, the NRC staff has assumed, based primarily on recommendations from the U. S. Geological Survey (USGS), that the relatively high seismicity in the Charleston area, including the 1886 Intensity X Charleston Earthquake would not recur anywhere but in the Charleston area.

Geologic and seismic research, funded by the NRC and carried out by the USGS, has been ongoing in the Charleston area since 1973. In reviewing the Virgil C. Summer OL-SAR, the NRC staff and the USGS considered all of the information available at that time and reaffirmed our original CP-SER conclusion.

No significant new information was presented at the January 28-29 ACRS Subcommittee meeting that was not considered in our evaluation of the Virgil C. Summer Nuclear Station, but the USGS stated that it was reviewing its position on the Charleston earthquake. The USGS review could result in one of the following three positions or some other alternative: (1) A Charleston-type event could only occur in the Charleston area - a reconfirmation of their past position; (2) A Charleston-type event is more likely to occur at Charleston than elsewhere, but is not unique to the Charleston area; (3) A Charleston-type event could occur throughout the eastern seaboard as there is nothing unique to the Charleston area.

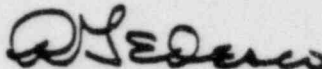
The NRC staff continues to support its position stated in the Virgil C. Summer OL-SER pending any new position statement by the USGS, which we expect to receive in the future.

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MAR 13 1982

A more detailed discussion of the NRC staff position on this matter is presented in Commission Paper (SECY-82-53), a copy of which is attached. We will notify you immediately upon receipt of the USGS position.



Robert L. Tedesco, Assistant Director  
for Licensing  
Division of Licensing

Enclosure:  
As stated



Mr. T. C. Nichols, Jr.  
Vice President & Group Executive  
Nuclear Operations  
South Carolina Electric & Gas Company  
Post Office Box 764  
Columbia, South Carolina 29218

cc: Mr. Henry Cyrus  
Senior Vice President  
South Carolina Public Service Authority  
223 North Live Oak Drive  
Moncks Corner, South Carolina 29461

J. B. Knotts, Jr., Esq.  
Debevoise & Liberman  
1200 17th Street, N. W.  
Washington, D. C. 20036

Mr. Mark B. Whitaker, Jr.  
Group Manager - Nuclear Engineering & Licensing  
South Carolina Electric & Gas Company  
Post Office 764  
Columbia, South Carolina 29218

Mr. Brett Allen Bursey  
Route 1, Box 93C  
Little Mountain, South Carolina 29076

Resident Inspector/Summer NPS  
c/o U. S. NRC  
Route 1, Box 64  
Jenkinsville, South Carolina 29065

Mr. James P. O'Reilly  
U. S. NRC, Region II  
101 Marietta Street  
Suite 3100  
Atlanta, Georgia 30303



# DISTRIBUTION OF BOARD NOTIFICATION

(Re possible change of position of 1886  
South Charleston earthquake)

## Summer (ASLB)

Atomic Safety and Licensing  
Board Panel  
Atomic Safety and Licensing  
Appeal Board Panel  
Docketing and Service Section  
Brett Allen Bursey  
George Fischer, Esq.  
Herbert Grossman, Esq.  
Dr. Frank F. Hooper  
Joseph B. Knotts, Jr., Esq.  
Mr. Gustave A. Linenberger  
Randolph R. Mahan  
Richard P. Wilson, Esq.

## ACRS Members

Dr. Robert C. Axtmann  
Mr. Myer Bender  
Dr. Max W. Carbon  
Mr. Jesse C. Ebersole  
Mr. Harold Etherington  
Dr. William Kerr  
Dr. Harold W. Lewis  
Dr. J. Carson Mark  
Mr. William M. Mathis  
Dr. Dade W. Moeller  
Dr. David Okrent  
Dr. Milton S. Plesset  
Mr. Jeremiah J. Ray  
Dr. Paul G. Shewmon  
Dr. Chester P. Siess  
Mr. David A. Ward

February 5, 1982



SECY-82-53

## POLICY ISSUE (Information)

FOR: The Commissioners

FROM: Executive Director for Operations

SUBJECT: POSSIBLE RELOCATION OF DESIGN CONTROLLING EARTHQUAKES IN THE EASTERN U.S.

PURPOSE: To provide the Commissioners with information relating to (1) possible modification of the U.S. Geological Survey position on the association of the 1886 Charleston, S.C. earthquake with geologic structure, and (2) the recent earthquakes in New Brunswick, Canada.

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Bpp

USGS that they had formed a working group to reassess the validity of their position on the Charleston earthquake. They indicated that their tentative position concluded that the reoccurrence of a Charleston-type earthquake should not be considered unique to the Charleston area. It was further indicated their recommendation would be forwarded to the USGS Director in approximately one month and that a policy decision on the treatment of the Charleston earthquake would be made at the Director's level.

Any major modification of the former USGS position could have significant impact on many Eastern US nuclear plant sites because Appendix A to 10 CFR Part 100 could require an earthquake of this type, with its resulting high ground motion, to be assumed to occur at any location.

A meeting between the EDO and the Director, USGS, on licensing issues is planned for the near future. Further information may be available at that time.

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William J. Dircks  
Executive Director for Operations



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BOARD NOTIFICATION DISTRIBUTION (82-22) **MAR 18 1982**

Docket File  
LB#1 Reading  
Board Notification File  
D. Eisenhut  
NRC PDR  
Local PDR  
DL Branch Chiefs  
W. Kane  
B. J. Youngblood  
M. Rushbrooke  
R. H. Vollmer  
M. Jambor  
R. Mattson  
S. Hanauer  
B. Snyder  
R. Hartfield, MPA  
OELD  
OIE (1)  
TERA  
NSIC  
TIC  
ACRS (16)  
H. R. Denton/ E. Case  
PPAS  
W. J. Dircks  
V. Stello  
S. Goldberg, ELD  
J. O'Reilly, Region II  
J. Snizek, IE Hqrs.  
R. L. Tedesco  
H. Thompson  
D. Ziemann

## MILLETT FAULT STUDY SCHEDULE

From: JIM BAILEY

To: JANE GRANT

- |                          |               |                                     |                      |
|--------------------------|---------------|-------------------------------------|----------------------|
| <input type="checkbox"/> | Comment       | <input type="checkbox"/>            | Per Our Conversation |
| <input type="checkbox"/> | Correction(s) | <input type="checkbox"/>            | Action Required      |
| <input type="checkbox"/> | Investigate   | <input checked="" type="checkbox"/> | As Requested         |
| <input type="checkbox"/> | Review        | <input type="checkbox"/>            | For Your Approval    |
| <input type="checkbox"/> | See Me        | <input type="checkbox"/>            | For Your Information |

- ☐ Circulate      ☐ Return      ☐ File      ☐ Discard

AS I DISCUSSED WITH  
YOU EARLIER THIS IS  
AN ITERATIVE PROCESS, BUT  
THIS IS THE FIRST CUT  
AT OUR PROGRAM.

Form No. 9-622A

Search oil industry data (Houston)

Microseismicity study

## Remote Sensing

Petrography

### Literature search

Reduction of field data

Consultant review

### REPORT PREPARATION:

## Outline

First draft

Incorporation of management/consult/client comments

Final draft

### Milestones:

Date	Activity	Type
4/16		
4/23		
4/30		
5/7		
5/14		
5/21		
5/28		
6/4		
6/11		
6/18		
6/25		
7/2		
7/9		
7/14		

Atlanta, Georgia 30302  
Telephone 404 858-7700

Mailing Address  
Pearl Office Box 4848  
Atlanta, Georgia 30302

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Georgia Power

the southern electric system

D. E. Dutton  
Vice President

June 1, 1982

Jeffery Armbruster  
District Chief  
U.S. Geological Survey  
6481 Peachtree Industrial Boulevard  
Suite B  
Doraville, GA 30360

Dear Mr. Armbruster:

Our drilling program to provide geologic information on the "Suggested Millet Fault" is now underway near the Savannah River with four drills presently core drilling on the Georgia side. As mentioned in earlier conversations with you, we are pleased to cooperate with you, to provide more information on the subsurface geology of the area. Members of your group are invited to visit our drilling operations in the field and log the core samples collected. Current plans are to complete these holes as permanent observation wells to allow future measurements of the potentiometric ground water surface.

In addition, to core drilling, a suite of geophysical logs have been run in each of the holes to assist in structural interpretation by correlation of lithologic units. A copy of each of the field geophysical logs is attached for your use. As these are preliminary, please treat as proprietary until official transmittal to the NRC or unless specific written permission is granted for release. Copies of the final geophysical logs will be sent to you as soon as they become available.

Sincerely yours,

Doug Dutton  
Vice President  
Generating Plant Projects

jwa

Attachment

cc: R. E. Jackson (w/attachment)  
W. I. Marine (w/attachment)  
M. Hawkins (w/attachment)  
Dr. W. Hayes (w/o attachment)  
R. Morriss (w/o attachment)  
D. O. Foster (w/o attachment)  
J. A. Bailey (w/o attachment)  
O. Batum (w/o attachment)  
R. A. Thomas (w/o attachment)  
C. R. McClure (w/o attachment)  
J. M. Grant (w/o attachment)

Southern Company Services, Inc.  
Post Office Box 2625  
Birmingham, Alabama 35202  
Telephone 205 870-6011



## Vogle Project

June 9, 1982

Jeffery Armbruster  
District Chief  
U.S. Geological Survey  
6481 Peachtree Industrial Boulevard  
Suite B  
Doraville, GA 30360

Dear Mr. Armbruster:

As you are aware our drilling program to provide geologic information on the "suggested Millett Fault" is now underway near the Savannah River. Attached is a copy of the final field geophysical logs for drill holes VG-1, VG-3, VG-4 and VG-66. Please treat as proprietary until official transmittal to the NRC or unless specific written permission is granted for release. Copies of the final geophysical logs for the other holes will be sent to you as soon as they become available.

Yours truly,

J. A. Bailey  
Project Licensing Manager

JAB/ssb

Enclosure

xc: R. A. Jackson (w/attachment)  
I.W. Marine (w/attachment)  
M. Hawkins (w/attachment)  
W.V. Conn (w/attachment)  
R. Morriss (w/o attachment)  
D.O. Foster (w/o attachment)  
D.E. Dutton (w/o attachment)  
O. Batum (w/o attachment)  
R.A. Thomas (w/o attachment)  
C.R. McClure (w/o attachment)  
J.M. Grant (w/o attachment)



Southern Company Services, Inc.  
Post Office Box 2625  
Birmingham, Alabama 35202  
Telephone 205 870-6011

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## Vogle Project

June 24, 1982

Mr. Jeffery Armbruster  
District Chief  
U.S. Geological Survey  
6481 Peachtree Industrial Boulevard  
Suite B  
Doraville, GA 30360

Dear Mr. Armbruster:

Enclosed is a copy of the final field geophysical logs for Drill Holes VG-4, VG-5, VG-6, and VG-7. Two sets of the composite log for VG-4 are included. The original log was not in the same format as the previous Birdwell Logs, so Law was requested to transpose the traces onto a log with the same format. Both logs are included for verification of the original. Please treat as proprietary until official transmittal to the NRC or unless specific written permission is granted for release. Copies of the final geophysical logs for the other holes will be sent to you as soon as they become available.

Sincerely yours,

J. A. Bailey  
Projects Licensing Manager

JAB/jwa  
Enclosure

xc: R. A. Jackson (w/attachment)  
I. W. Marine (w/attachment)  
M. Hawkins (w/attachment)  
W. V. Conn (w/attachment)  
R. Morris (w/o attachment)  
D. O. Foster (w/o attachment)  
D. E. Dutton (w/o attachment)  
O. Batum (w/o attachment)  
R. A. Thomas (w/o attachment)  
C. R. McClure (w/o attachment)  
J. M. Grant (w/o attachment)