

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 8/21/80

Project Title: Microearthquake Monitoring at B. Everett Jordan Lake, North Carolina

Project No: G-35-672

Project Director: Dr. L. T. Long

Sponsor: U. S. Army Engineer District; Wilmington, N.C. 2840^C₂

Agreement Period: From 1/1/80 Until 12/31/80

Type Agreement: Delivery Order No. DACW54-80-F-2104 (under Contract No. N00014-79-H-0108)

Amount: \$6,093 (Fixed Price)

Reports Required: Quarterly Letter Reports; Final (Annual) Report

Sponsor Contact Person (s):

Technical Matters

R. L. Siesen
U.S. Army Corps of Engineers
P. O. Box 1890
Wilmington, N.C. 28402

Contractual Matters

(thru OCA)

Jacqueline F. Smith
U. S. Army Engineer District,
Wilmington
P. O. Box 1890
Wilmington, N. C. 28402

NOTE: FOLLOW-ON PROJECT TO G-35-646

Debbie Earp
Procurement and Supply Division
919/343-4577

Defense Priority Rating: None

Assigned to: Geophysical Sciences (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
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SPONSORED PROJECT TERMINATION SHEET

Date 6/23/82

Project Title: Microearthquake Monitoring at B. Everett Jordan Lake, N.C.

Project No: G-35-672

Project Director: Dr. L. T. Long

Sponsor: U. S. Army Engineer District

Effective Termination Date: 12/31/80

Clearance of Accounting Charges: _____

Grant/Contract Closeout Actions Remaining:

- Final Invoice and ~~Closing Documents~~
- Final Fiscal Report
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other _____

Assigned to: Geo. Sci. (School/Laboratory)

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SR 167-151

April 22, 1980

Mr. R.L. Siesen
U.S. Army Corps of Engineers
P.O. Box 1890
Wilmington, N.C. 28401

Subject: Quarterly Letter Report No. 1, covering period of 1 January 1980 -
31 March 1980.

Re: Contract No. DACW 54-79-1105 (Continuation)
Microearthquake Monitoring, B. Everette Jordan Lake, N.C.

Dear Sirs:

The B. Everette Jordan seismograph has been in continuous operation throughout the three month period covered by this quarterly report. During January 521 hours of noise free seismic data were obtained for 70 percent coverage and 223 hours of unusable data were obtained. During February 633 hours of noise free seismic data were obtained for 90.9 percent coverage and 63 hours of unusable data were obtained. During March 680 hours of noise free seismic data were obtained for 91.4 percent coverage and 64 hours of unusable data were obtained. The periods of unusable data were primarily due to periods of ink failure. These rarely lasted more than one day.

No regional nor teleseismic events were recorded at this station during the reporting period, but numerous quarry blasts from Haywood, Mt. Vernon Springs, Brantown, Leesville, Sharon Harris, Auburn, Hillsborough, Farrington, Reuse, Knightdale and Carrboro were recorded.

During this reporting period no natural seismic events were identified as occurring within a 15 km radius of the B. Everette Jordan seismograph station.

Respectfully submitted,

L. Timothy Long

LTl:ba

GEORGIA INSTITUTE OF TECHNOLOGY

SCHOOL OF GEOPHYSICAL SCIENCES

July 25, 1980

Atlanta, Georgia 30332
(404) 894-2857

Mr. R. L. Seisen
U. S. Army Corps of Engineers
P. O. Box 1890
Wilmington, N. C. 28401

Subject: Quarterly Letter Report No. 2, covering period of 1 April
1980 - 30 June 1980.

Re: Contract No. DACW54-80-F-2104 Microearthquake Monitoring,
B. Everette Jordan Lake, North Carolina

Dear Sirs:

The B. Everette Jordan seismograph operated continuously during April, 1980 with no significant lost time until 25 May 1980. The loss of coverage between 25 May 1980 and 9 June 1980 was due to a short circuit at one of the pen drive transistors. The other pen drive transistor, the op. amp. and the preamp batteries were also in need of replacement. After these repairs were made and the clock reset, the system remained operating through the end of the period covered by this report. During April 659 hours of noise free seismic data were obtained for 91.5 percent coverage and 61 hours of unusable data were obtained. During May 490 hours of noise free seismic data were obtained for 65.9 percent coverage and 99 hours of unusable data were obtained. During June 493 hours of noise free seismic data were obtained for 68.5 percent coverage and 18 hours of unusable data were obtained. The above mentioned system failure was responsible for loss of data during May and June. The periods of unusable data were due primarily to periods of ink failure, which rarely lasted more than one day.

The seismograph recorded two southeastern regional events during this period. These are shown in Table 1 below.

Table 1

Southeastern Regional Earthquakes recorded at B. Everette
Jordan Lake Seismograph 1 April 1980-30 June 1980

<u>Date</u>	<u>P-Arrival</u>	<u>S-P(sec)</u>	<u>Location</u>
10JUN80	23:48:23.0	39.0	35°N, 82.8°W, Asheville, N.C.
25JUN80	18:03:12.0	53.5	35.9°N, 84.4°W, Maryville, TN.

Several distant blasts or events were recorded during this recording period. These are listed in Table 2.

Table 2



Distant blasts or events recorded at B. Everette Jordan
seismograph between 1 April 1980 and 30 June 1980

<u>Date</u>	<u>P-Arrival</u>	<u>S-P(sec)</u>	<u>Distance from BEJ (km)</u>
16APR80	22:04:51.7	21.3	175
22APR80	3:14:33.2	17.5	144
24APR80	16:43:27.1	12.3	101
27APR80	21:49:44.5	30.5	250
18JUN80	17:10:23.0	11.5	94
24JUN80	20:44:25.0	20.5	166

The seismograph continues to record quarry blasts from Haywood, Sharon Harris, Mt. Vernon Springs, Auburn, Hillsborough, Carrboro, Farrington, Leesville, Lawbranch 3, Bragtown, Knightdale and Staley.

During the period covered by this report no natural seismic events were identified as occurring within a 15 km radius of the B. Everette Jordan Lake seismograph.

Respectfully submitted. 

 Leland T. Long 
Associate Professor

LTL/dh

GEORGIA INSTITUTE OF TECHNOLOGY
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Atlanta, Georgia 30332
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December 10, 1980

Mr. R. L. Seisen
U. S. Army Corps of Engineers
P. O. Box 1890
Wilmington, N. C. 28401

Subject: Quarterly Letter Report No. 3, covering period of 1 July
1980 to 30 September 1980.

Re: Contract No. DACW54-80-F-2104 Microearthquake monitoring,
B. Everette Jordan Lake, North Carolina

Dear Sirs:

The B. Everette Jordan seismograph was in acceptable operation only during September, whereas during the first two months of this recording period time was lost due to recording-instrument breakdown. Noise was not a contributing factor in the low coverage.

During July 44% of the total possible recording time was lost to instrument breakdown and from the remaining 56% only 2% was attributed to noise. August coverage was even worse; only 200 hours of data were recorded amounting to only 27% of the total possible recording time. 64% of the time was lost to instrument breakdown, while the remaining time was missed due to ink loss. September marked the best coverage of this report period whereby only 13% of the total possible recording time was lost either to noise (1%), ink loss (1%) and principally to instrument breakdown (11%).

Several regional blasts were recording by the seismograph during this period, from them the following are listed:

<u>Date</u>	<u>P-Arrival</u>	<u>S-P (sec)</u>	<u>Distance from BEJ (km)</u>
4AUG80	22:40:17.8	9.8	80
6AUG80	19:24:48.1	16.8	138
9SEP80	16:14:35.5	10.3	85
25SEP80	21:16:12.9	10.3	85

The seismograph continued to record quarry blasts from Haywood, Sharon Harris, Auburn, Hillsborough, Farrington, Leesville and Bragtown.

No natural seismic events were identified as occurring within a 15 km radius of the B. Everette Jordan Lake seismograph during this period.

Respectfully submitted,

Leland T. Long
Associate Professor

N. I. Alusi

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GEORGIA INSTITUTE OF TECHNOLOGY
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February 23, 1981

Mr. R. L. Siesen
U. S. Army Corps of Engineers
P. O. Box 1890
Wilmington, N.C. 28401

Subject: Quarterly letter Report No. 4, covering the period of 1
October 1980 to 31 December 1980.

Re: Contract No. DACW54-80-F-2104 Microearthquake Monitoring,
B. Everett Jordan Lake, North Carolina

Dear Sirs:

The B. Everett Jordan seismograph operated continuously during the period with only a 16% loss of recording time. Most of this can be attributed to recording-instrument breakdown, and except for the period from October 3 to October 12 when construction was being carried out at the dam site, noise was not a significant factor in the coverage loss.

During October there was only a loss of 5.8% of the total possible coverage time. There was a loss of 5.1% due to instrument failure, and of the remaining data only 0.7% was lost due to noise. During November there was a loss of 19.3% of coverage time with 13.1% due to instrument breakdown. Of the remaining data 7.2% was lost due to noise, however, the majority of this occurred between October 3 and October 12 when construction was being carried out at the dam site. December's coverage was the worst during the period. There was a loss of 23.7% of the total possible coverage time with 9.5% of this attributed to instrument failure and 3.2% to ink loss. An additional 6.5%, December 28 through December 31, was lost because the records could not be found.

Several regional blasts or events were recorded by the seismograph during this period, some of which are listed below:

<u>Date</u>	<u>P-Arrival</u>	<u>S-P (sec)</u>	<u>Distance from BEJ (km)</u>
8SEP80	20:39:47.5	20.2	198
13SEP80	19:50:14.4	19.6	175
14SEP80	01:20:34.9	20.4	200
14SEP80	20:50:28.8	11.9	98
21SEP80	18:19:29.4	10.5	86
03OCT80	21:07:37.6	22.2	240
13DEC80	19:48:11.1	9.0	74

The seismograph continued to record quarry blasts from Haywood, Sharon Harris, Auburn, Hillsborough, Farrington, Leesville, Gragtown, Knightsdale, Lawbranch I, Lamance, Mountain Vernon Springs, Lemon Springs and Neuse.

No natural seismic events were identified as occurring within a 15 km radius of B. Everett Jordan Lake seismograph during this period.

Respectfully submitted.

Leland T. Long
Associate Professor

LTL/dh