FIELD SASW DATA REPORT

Spectral-Analysis-of-Surface-Waves (SASW) Testing

of the Vogtle Phase 1 Test Field

Vogtle Electric Generating Plant – Units 3 and 4

 (1) Complete Sets of Seismic Results from All Sites, (2) Equipment
 Calibration Documents (3) Verification of the Forward Modeling Procedure (WinSASW) and (4) Benefits and Limitations of the SASW Method

for

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by

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1.0 Introduction

This report documents the measurements, analyses and results from Spectral-Analysis-of-Surface-Waves (SASW) tests that were performed at 29 sites during four different site visits on the test fill in Vogtle, GA. It includes 29 appendices as follows:

- Appendix A contains a map of the SASW test locations on the test fill. Also, a summary of V_S profiles for each site visit are included in this appendix.
- (2) Appendices B through Z contain the "raw" data (wrapped phase plots versus frequency) for Sites A through G for each site visit, respectively. However, the data of Site G of each site visit was combined into Sites A through F of the same site visit to obtain deeper V_S profiles. During fourth site visit, an additional SASW test was performed on the natural soil at Site H. In total, there are 25 appendices (B through Z) for the SASW measurements performed on the test fill. Each appendix contains the field data sheet, "raw data" from each SASW set-up, experimental field dispersion curve determined from the raw data, theoretical match to the experimental dispersion curve and resulting shear wave velocity profile for that test location.
- (3) Appendix AA contains the Calibration Documentation for Geophones and Agilent 35670A Dynamic Signal Analyzer.
- (4) Appendix AB contains the verification of the forward modeling procedure (WinSASW, version 1.23) performed to evaluate the V_s profile from each field dispersion curve. This verification is the one that was developed under the QA Requirements of the Yucca Mountain Project and is currently valid on that project.
- (5) Appendix AC contains a short discussion of the benefits and limitations of the SASW method.

Appendix B

SASW Measurements of First Site Visit at Vogtle, GA Site Location: Site A

| 1. Data Sheet(s) | .B.2 |
|--|-------|
| 2. Phase Plots from SASW Tests | .B.4 |
| 3. Table of Masking Parameters | .B.12 |
| 4. Experimental Dispersion Curves | .B.14 |
| 5. Matching the Experimental and Theoretical | |
| Dispersion Curves | .B.15 |
| 6. Shear Wave Velocity Profile | .B.16 |
| 7. Table of Profile Parameters | .B.16 |



* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4

3 - Receiver SASW Data Sheet

Data Sheet #: SA#]

| Project | Vogtle |
|-------------|------------------------|
| Location | = G(SA # 7) |
| Date/(Time) | : Dec, 9,2007(: ~:) |
| Personnel | : Stokee, Minjae, Tuan |
| Recorded by | : Yuan |
| Checked by | : Minjae |
| R1 I.D. : | GEC 92003 |
| R2 I.D. : | GEF 92002 |
| R31.D. : | GEC 92001 |



| Di | Distance (ft) | | Impact | | Impact | Pecord # | Freq. Range | Notos |] |
|--------|---------------|---------|-----------|-----|---|----------|-------------|-------|------------|
| S - R1 | R1 - R2 | R2 - R3 | Direction | | Source | Record # | (Hz) | Noles | . 1 |
| 25 | 25 | 25 | For | Rev | Buildozer | GI | 0-100 | | When I |
| | | | For | Rev | | | . ~ | | 1 reverse |
| 50 | 50 | | FOD | Rev | ~ | GZ | 0 - 100 | | arrection |
| | | | For | Rev | | | ~ | | Cocation i |
| 50 | 50 | | For | Rev | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | G3 | 0 - 100 | | Deophine |
| | | | For | Rev | | | ~ | | not |
| 25 | 25 | 25 | For | Rev | 11 | G4 | 0-100 | | Changed |
| | | | For | Rev | | | ~ | | 1/ |
| | | | For | Rev | | | ~ | | 1/ |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | 7 | | ~ | | |
| | | | For | Rev | | | ~ | 1 | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4











Figure B.3 Phase Plots Measured by SASW Testing with 1-ft Receiver Spacing (SA9_F_21.DAT)







Figure B.5 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SA1 F 43.DAT)



Figure B.6 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SA2_F_43.DAT)











Figure B.9 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SA4_F_21.DAT)











Figure B.12 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SA5_F_21.DAT)







Figure B.14 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SA7_F_21.DAT)



Figure B.15 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SA8_F_21.DAT)







Figure B.17 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SA8_F_43.DAT)



Figure B.18 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_21.DAT)







Figure B.20 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_21.DAT)



Figure B.21 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_43.DAT)







Figure B.23 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G3_F_21.DAT)

| | | | , | | |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|--------------|
| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename |
| 1 | 1 | 0 | 235 | 1 | |
| | 2 | 671 | 800 | - | SAI_F_21.DAT |
| 1 | 1 | 0 | 237 | 1 | |
| 1 | 2 | 453 | 800 | - | SA2_F_21.DAT |
| - | 1 | 0 | 286 | 1 | |
| 1 | 2 | 515 | 800 | - | SA9_F_21.DAT |
| 1 | 1 | 0 | 247 | 1 | |
| 1 | 2 | 576 | 800 | - | SAI0_F_2.DAT |
| 2 | 1 | 0 | 142 | 1 | |
| 2 | 2 | 412 | 800 | , - , | SA1_F_43.DA1 |
| 2 | 1 | 0 | 136 | 1 | |
| 2 | 2 | 542 | 800 | - | SA2_F_43.DA1 |
| 2 | 1 | 0 | 141 | 1 | |
| 2 | 2 | 495 | 800 | - | SA9_F_43.DA1 |
| 2 | 1 | 0 | 138 | 1 | |
| 2 | 2 | 576 | 800 | - | SAI0_F_4.DAI |
| 2 | 1 | 0 | 95 | 1 | |
| 3 | 2 | 360 | 800 | - | SA4_F_21.DA1 |
| (| 1 | 0 | 62 | 1 | |
| 0 | 2 | 229 | 800 | - | SA3_F_43.DA1 |
| (| 1 | 0 | 62 | 1 | |
| 0 | 2 | 232 | 800 | - | SA4_F_43.DA1 |
| 0 | 1 | 0 | 38.5 | 1 | |
| 9 | 2 | 168.5 | 400 | - | SA5_F_21.DA1 |
| 0 | 1 | 0 | 53.5 | 1 | |
| 9 | 2 | 167.5 | 400 | - | SA0_F_21.DA1 |
| 0 | 1 | 0 | 39 | 1 | CATE OI DAT |
| 9 | 2 | 168.5 | 400 | - | SA7_F_21.DA1 |
| 0 | 1 | 0 | 47.5 | 1 | CAR E DI DAT |
| 9 | 2 | 109.5 | 400 | - | SA8_F_21.DA1 |
| | 1 | 0 | 26.5 | 1 | |
| 18 | 2 | 29 | 31 | 1 | SA7_F_43.DAT |
| | 3 | 115 | 400 | - | |

Table B.1Tables of Masking Parameters Used on Data Collected during First Site Visit
at Site A

Checked by <u>Jin-Cheng</u> Lin. Yin-Cheng Lin Performed by_ Jiabei Yuan

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| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename | |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|--------------|--|
| | 1 | 0 | 26 | 1 | | |
| 10 | 2 | 28 | 35.5 | 1 | SAPE 12 DAT | |
| 10 | 3 | 108.5 | 126.5 | 4 | 5A0_F_45.DA1 | |
| | 4 | 200 | 400 | - | | |
| 25 | 1 | 0 | 17 | 1 | G1 E 21 DAT | |
| 23 | 2 | 91.5 | 100 | - | UI_F_21.DAT | |
| 25 | 1 | 0 | 16.62 | 1 | C1 E 42 DAT | |
| 23 | 2 | 90.88 | 100 | - | 01_1_43.DA1 | |
| | 1 | 0 | 14.88 | 1 | | |
| 25 | 2 | 20 | 25.12 | 1 | G4_F_21.DAT | |
| | 3 | 70.88 | 100 | - | | |
| | 1 | 0 | 16.38 | 1 | | |
| 25 | 2 | 21.62 | 28.12 | 1 | G4_F_43.DAT | |
| | 3 | 88.88 | 100 | 8 | | |
| 50 | 1 | 0 | 8.12 | 1 | C2 E 21 DAT | |
| 50 | 2 | 98 | 100 | - | 02_F_21.DA1 | |
| 50 | 1 | 0 | 8.25 | 1 | C2 E 21 DAT | |
| 50 | 2 | 62.88 | 100 | | 05_F_21.DA1 | |

Table B.2Tables of Masking Parameters Used on Data Collected during First Site
Visit at Site A (Continued)

____ Checked by <u>Jin-Cheng</u> Lin. Yin-Cheng Lin Performed by Jiabei Yuan



Figure B.24 Experimental Dispersion Curve Measured during First Site Visit at Site A at Vogtle, GA; Linear Wavelength Axis



Figure B.25 Experimental Dispersion Curve Measured during First Site Visit at Site A at Vogtle, GA; Logarithmic Wavelength Axis



Figure B.26 Experimental and Theoretical Dispersion Curves from Site A in First Site Visit at Vogtle, GA; Linear Wavelength Axis



Figure B.27 Experimental and Theoretical Dispersion Curves from Site A in First Site Visit at Vogtle, GA; Logarithmic Wavelength Axis



Figure B.28 Shear Wave Velocity Profile Determined at Site A during First Site Visit at Vogtle, GA

| Table B.3 | Profile | Parameters | Used | to | Develop | Preliminary | Theoretical | Dispersion |
|-----------|---------|------------|------|----|---------|-------------|-------------|------------|
| | Curve a | | | | | | | |

| Layer No. | Thickness, ft | Depth to Top of Layer, ft | S-Wave Velocity, ft/s | Assumed Poisson's Ratio | P-Wave Velocity, ft/s | Assumed Total Unit Weight, pcf |
|-----------|---------------|------------------------------|--------------------------|----------------------------|--------------------------|-----------------------------------|
| 1 | 0.8 | 0.0 | 520 | 0.24 | 889 | 128 |
| 2 | 0.8 | 0.8 | 600 | 0.24 | 1026 | 128 |
| 3 | 2.0 | 1.6 | 700 | 0.24 | 1197 | 128 |
| 4 | 1.5 | 3.6 | 850 | 0.24 | 1453 | 128 |
| 5 | 2.3 | 5.1 | 950 | 0.24 | 1624 | 128 |
| 6 | 4.0 | 7.4 | 1050 | 0.24 | 1795 | 128 |
| 7 | 4.0 | 11.4 | 1150 | 0.24 | 1966 | 128 |
| 8 | 4.0 | 15.4 | 1250 | 0.24 | 2137 | 128 |
| 9 | 29.6 | 19.4 | 800 | 0.24 | 1368 | 128 |
| 10* | 16.4 | 49.0 | 800 | 0.24 | 1368 | 128 |
| 11*# | 30.0 | 65.4 | 1900 | 0.42 | 5000 | 135 |
| 12*# | Half Space | 95.4 | 2200 | 0.38 | 5000 | 135 |

* Layer below maximum depth of the V_S Profile.

Layer below water tatble.

reg Performed by Kenneth H. Stokoe, II ng Lin Checked by Yin-Cheng Lin

Appendix C

SASW Measurements of First Site Visit at Vogtle, GA Site Location: Site B

| 1. Data Sheet(s) | C.2 |
|--|------|
| 2. Phase Plots from SASW Tests | C.4 |
| 3. Table of Masking Parameters | C.11 |
| 4. Experimental Dispersion Curves | C.13 |
| 5. Matching the Experimental and Theoretical | |
| Dispersion Curves | C.14 |
| 6. Shear Wave Velocity Profile | C.15 |
| 7. Table of Profile Parameters | C.15 |

| 3 - | Receiver | SASW | Data | Sheet |
|-----|----------|------|------|-------|
|-----|----------|------|------|-------|

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| Project : Vogtle | Data Sheet #: <u>SAH2</u> |
|--|---|
| Location : $SB(SA # 2)$ | Disk # : SA # 2 |
| Date/(Time): Dec / 9 / 2007(: ~:) | |
| Personnel : Stoke, Minine, Yuan | Sketch |
| Recorded by : Yuan | |
| Checked by : Milizia e | • • |
| R11.D.: <u>GEC 92003 Near</u> | a an an an an an an an ann an ann an ann an a |
| R21.D.: GEC 92002 Center | |
| R31.D.: GEC 92001 For | |
| an a | Same at Drewing |

| Di | Distance (ft) | | Distance (ft) Impact Impact Record # | | Freq. Range | Notes | | |
|--------|---------------|---------|--------------------------------------|-----|--------------------|----------|---------|-------|
| S - R1 | R1 - R2 | R2 - R3 | Direction | | Source | Necola # | (Hz) | Notes |
| 1 | . (| 2 | For | Rev | Strail hanner | SBI | ~ | |
| 1 | 1 | 2 | For | Rev | ~ | SB2 | ~ . | |
| 3 | 3 | 6 | For | Rev | ~ | SB3 | 0 - 800 | |
| 3 | 3 | 6 | FOD | Rev | <u></u> . | SB4 | 0 - 800 | |
| 9 | 9 | 18 | For | Rev | Modium Modemmer | SBS | 0-400 | |
| 9 | 9 | 18 | For | Rev | ~ | SB6 | 0 ~ 400 | |
| | 1 | 2 | FOT | Rev | inormaly | SBJ | 0 ~ 800 | |
| Í | 1 | 2 | For | Rev | ~ | SB8 | 0 ~ 800 | |
| | | | For | Rev | | | ~ | - |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ . | |
| | | | For | Rev | | | ~ | |
| | 1 | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | 1 | 1 | For | Rev | | | ~ | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4

3 - Receiver SASW Data Sheet

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| Project : <u>Vogtle</u> |
|---|
| Location : $\underline{G(SA \ddagger 7)}$ |
| Date/(Time) : De(1 9 12007(: ~ :) |
| Personnel : Stokoe, Minjae, Tuar |
| Recorded by : Yuan |
| Checked by : Minjae |
| R11.D.: GGC 92003 |
| R21.D.: <u>GEC 92002</u> |
| R31.D.: GEC 92001 |





| Distance (ft) | | Impact | | Impact | pact Record # | Freq. Range | Notos |] | |
|---------------|---------|---------|-----------|--------|---------------|-------------|---------|-------|------------|
| S-R1 | R1 - R2 | R2 - R3 | Direction | | Source | Record # | (Hz) | Notes | . 1 |
| 25 | 25 | 25 | For | Rev | Buildozer | GI | 0-100 | | When I |
| | | | For | Rev | | | . ~ | | 1 demostiv |
| 50 | 150 | | FOD | Rev | 11 | GZ | 0 - (02 | | anecia |
| | | | For | Rev | | | ~ | | Cocation |
| 50 | 50 | | For | Rev | 11 | G3 | 0-100 | | acophine |
| | | | For | Rev | | | ~ | | not |
| 25 | 25 | 25 | For | Rev | 11 | G4 | 0-100 | | [Changed |
| | | | For | Rev | | | ~ | |] / |
| | | | For | Rev | | | ~ | | 1/ |
| | | | For | Rev | | | ~ | | μ |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4











Figure C.3 Phase Plots Measured by SASW Testing with 1-ft Receiver Spacing (SB7_F_21.DAT)



Figure C.4 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SB1_F_43.DAT)



Figure C.5 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SB2_F_43.DAT)



Figure C.6 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SB7_F_43.DAT)



Figure C.7 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SB8_F_43.DAT)



Figure C.8 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SB3_F_21.DAT)



Figure C.9 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SB3_F_43.DAT)



Figure C.10 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SB4_F_43.DAT)



Figure C.11 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SB5_F_21.DAT)



Figure C.12 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SB6_F_21.DAT)



Figure C.13 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SB5_F_43.DAT)



Figure C.14 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SB6_F_43.DAT)



Figure C.15 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_21.DAT)



Figure C.16 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_43.DAT)



Figure C.17 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing $(G4_F_{21.DAT})$



Figure C.18 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_43.DAT)



Figure C.19 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G2_F_21.DAT)



Figure C.20 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G3_F_21.DAT)

| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|--------------|
| 1 | 1 | 0 | 250 | 1 | SB1_F_21.DAT |
| 1 | 2 | 388 | 1600 | - | |
| 1 | 1 | 0 | 248 | 1 | CD2 E 21 DAT |
| 1 | 2 | 376 | 1600 | - | 5D2_F_21.DA1 |
| 1 | 1 | 0 | 251 | 1 | SD7 E 21 DAT |
| 1 | 2 | 456 | 800 - | | 507_1_21.DA1 |
| 2 | 1 | 0 | 138 | 1 | SD1 E 42 DAT |
| Z | 2 | 292 | 1600 | - | 5D1_F_45.DA1 |
| 2 | 1 | 0 | 140 | 1 | SP2 E 12 DAT |
| 2 | 2 | 314 | 1600 | - | 5D2_F_45.DA1 |
| 2 | 1 | 0 | 133 | 1 | SD7 E 42 DAT |
| 2 | 2 | 526 | 800 | - | 5D7_F_45.DA1 |
| 2 | 1 | 0 | 143 | 1 | SDO E 12 DAT |
| 2 | 2 | 540 | 800 | - | 5D0_F_45.DA1 |
| | 1 | 0 | 104 | 1 | |
| 3 | 2 | 117 | 136 | 1 | SB3_F_21.DAT |
| | 3 | 187 | 800 | - | |
| | 1 | 0 | 60 | 1 | |
| 6 | 2 | 117 | 134 | 1 | SB3_F_43.DAT |
| | 3 | 321 | 800 | - | |
| | 1 | 0 | 58 | 1 | |
| 6 | 2 | 108 | 137 | 1 | SB4_F_43.DAT |
| | 3 | 220 | 800 | - | |
| | 1 | 0 | 43.5 | 1 | |
| 9 | 2 | 71 | 122 | 2 | SB5_F_21.DAT |
| | 3 | 164 | 400 | - | |
| | 1 | 0 | 46 | 1 | |
| 9 | 2 | 82.5 | 123.5 | 2 | SB6_F_21.DAT |
| | 3 | 163 | 400 | - | |
| 10 | 1 | 0 | 31 | 1 | CD5 E 42 DAT |
| 18 | 2 | 115.5 | 400 | 2 — | 5D5_F_45.DA1 |

 Table C.1
 Tables of Masking Parameters Used on Data Collected during First Site Visit at Site B

Performed by <u>Jiabei</u> Checked by <u>Jin-Cheng</u> Lin.

| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename | |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|--------------|--|
| | 1 | 0 | 34 | 1 | | |
| 18 | 2 | 43 | 52.5 | 1 | SB6_F_43.DAT | |
| | 3 | 116.5 | 400 | - |] | |
| 25 | 1 | 0 | 17 | 1 | C1 E 21 DAT | |
| 23 | 2 | 91.5 | 100 | - | UI_F_21.DAT | |
| 25 | 1 | 0 | 16.62 | 1 | C1 = 42 DAT | |
| 23 | 2 | 90.88 | 90.88 100 - | | GI_F_45.DA1 | |
| | 1 | 0 | 14.88 | 1 | | |
| 25 | 2 | 20 | 25.12 | 1 | G4_F_21.DAT | |
| | 3 | 70.88 | 100 | - | | |
| | 1 | 0 | 16.38 | 1 | | |
| 25 | 2 | 21.62 | 28.12 | 1 | G4_F_43.DAT | |
| | 3 | 88.88 | 100 | - | | |
| 50 | 1 | 0 | 8.12 | 1 | C2 E 21 DAT | |
| 50 | 2 | 98 | 100 | - | 02_F_21.DA1 | |
| 50 | 1 | 0 | 8.25 | 1 | C2 E 21 DAT | |
| 50 | 2 | 62.88 | 100 | - | UJ_F_21.DA1 | |

Table C.2Tables of Masking Parameters Used on Data Collected during First Site
Visit at Site B (Continued)

____ Checked by <u>Jin-Cheng</u> Lin. Yin-Cheng Lin Performed by Jiabei Yuan



Figure C.21 Experimental Dispersion Curve Measured during First Site Visit at Site B at Vogtle, GA; Linear Wavelength Axis



Figure C.22 Experimental Dispersion Curve Measured during First Site Visit at Site B at Vogtle, GA; Logarithmic Wavelength Axis



Figure C.23 Experimental and Theoretical Dispersion Curves from Site B in First Site Visit at Vogtle, GA; Linear Wavelength Axis

Wavelength (m)



Figure C.24 Experimental and Theoretical Dispersion Curves from Site B in First Site Visit at Vogtle, GA; Logarithmic Wavelength Axis


Figure C.25 Shear Wave Velocity Profile Determined at Site B during First Site Visit at Vogtle, GA

| Table C.3 | Profile Parameters | Used to | Develop | Preliminary | Theoretical | Dispersion |
|-----------|----------------------|------------|--------------|-------------|-------------|------------|
| | Curve at Site B in t | he First S | ite Visit at | Vogtle, GA | | |

| Layer No. | Thickness, ft | Depth to Top of Layer, ft | S-Wave Velocity, ft/s | Assumed Poisson's Ratio | P-Wave Velocity, ft/s | Assumed Total Unit Weight, pcf |
|-----------|---------------|------------------------------|--------------------------|----------------------------|--------------------------|-----------------------------------|
| 1 | 0.9 | 0.0 | 500 | 0.24 | 855 | 128 |
| 2 | 0.8 | 0.9 | 600 | 0.24 | 1026 | 128 |
| 3 | 2.0 | 1.6 | 700 | 0.24 | 1197 | 128 |
| 4 | 1.5 | 3.6 | 850 | 0.24 | 1453 | 128 |
| 5 | 2.3 | 5.1 | 950 | 0.24 | 1624 | 128 |
| 6 | 4.0 | 7.4 | 1050 | 0.24 | 1795 | 128 |
| 7 | 4.0 | 11.4 | 1150 | 0.24 | 1966 | 128 |
| 8 | 4.0 | 15.4 | 1250 | 0.24 | 2137 | 128 |
| 9 | 29.6 | 19.4 | 800 | 0.24 | 1368 | 128 |
| 10* | 16.4 | 49.0 | 800 | 0.24 | 1368 | 128 |
| 11*# | 30.0 | 65.4 | 1900 | 0.42 | 5000 | 135 |
| 12*# | Half Space | 95.4 | 2200 | 0.38 | 5000 | 135 |

* Layer below maximum depth of the V_S Profile.

Layer below water tatble.

CH Jin-Cheng Lin Checked by K. H. J.C. Yin-Cheng Lin Kenneth H. Stokoe, II TOKN Performed by_

Appendix D

SASW Measurements of First Site Visit at Vogtle, GA Site Location: Site C

| 1. Data Sheet(s) | D.2 |
|--|------|
| 2. Phase Plots from SASW Tests | D.4 |
| 3. Table of Masking Parameters | D.11 |
| 4. Experimental Dispersion Curves | D.13 |
| 5. Matching the Experimental and Theoretical | |
| Dispersion Curves | D.14 |
| 6. Shear Wave Velocity Profile | D.15 |
| 7. Table of Profile Parameters | D.15 |

| Project | : Voqtle |
|------------|------------------------|
| Location | :SC(SA#3) |
| Date/(Time | =): Dec/9/2007(:~:) |
| Personnel | : Stokee, Minjae, Yuan |
| Recorded | by : Yuan |
| Checked | by: <u>Minjae</u> |
| R1 I.D. : | GEC 92003 Near |
| R2 I.D. : | GEC 92002 Center |
| R3 I.D. : | GEC 92001 Far |

| Data Sheet # : | SA#3 |
|----------------|------|
| Disk # · | SA#3 |

| | Sketch | |
|---|--------|--|
| | | |
| { | | |
| | | |
| | | |
| | | |
| 1 | | |
| | | |
| | | |

| Distance (ft) | | Impact | | Impact Record | Pacard # | Freq. Range | Notos | |
|---------------|---------|---------|------|---------------|-----------------|-------------|---------|----------------------|
| S - R1 | R1 - R2 | R2 - R3 | Dire | ction | Source | Necolu # | (Hz) | NOLES |
| 1 | 1 | 2 | For | Rev | Hammen | SCI | 0-800 | |
| 1 | C | 2 | For | Rey | ~ | SOD | 0 - 800 | |
| 3 | 3 | 6 | For | Rey | ~ | SC3 | 0 - 500 | |
| 3 | 3 | 6 | 00 | Rev | 100 100 | Sc4 | 0-800 | |
| 9 | 9 | 18 | FOD | Rev | Hanner | SC5 | 0 - 400 | |
| 9 | 9 | 18 | For | Rev | 1 | SC6 | 0-400 | 2 |
| 1 | 1 | 2 | For | Rev | Small Hanner | SCT | 0 ~ 800 | 1 Hold down geophype |
| Ĺ | 1 | 2 | For | Re | NI | 508 | 0 - 800 | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | · ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | • • | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4



| Location : | <u> </u> |
|-------------|---|
| Date/(Time) | : Dec, 9,2007(: ~:) |
| Personnel | : Stoke, Minjae, Tuan |
| Recorded by | : Yuan |
| Checked by | : Minjae |
| | Ų |
| R1 I.D. : | GEC 92003 |
| R2 I.D. : | GEG 92002 |
| R3 I.D. : | (FE 92001 |
| | The second se |

: Vogtle

Project



| Di | Distance (ft) Impac | | pact | Impact Record # | | Freq. Range | Notes | | | |
|--------|---------------------|---------|------|-----------------|-----------|-------------|---------|-------|-----|------------|
| S - R1 | R1 - R2 | R2 - R3 | Dire | ction | Source | rce | (Hz) | Notes | | |
| 25 | 25 | 25 | For | Rev | Buildozer | GI | 0-100 | | 1 | When I |
| | | | For | Rev | | | . ~ | | 17 | dimensie |
| 50 | 50 | | FOD | Rev | N | GZ | 0 - 100 | |] | anech in |
| | | | For | Rev | | | ~ | | 1 | Colation i |
| 50 | 50 | | For | Rev | 11 | G3 | 0 - 100 | | | Oceophone |
| | | | For | Rev | | | ~ | |] | not |
| 25 | 25 | 25 | For | Rev | 11 | G4 | 0-100 | |] | changed |
| | | | For | Rev | | | 2 | |] / | |
| | | | For | Rev | | | ~ | | | |
| | | | For | Rev | | | ~ | | μ | |
| | | | For | Rev | | | ~ | |] | |
| | | | For. | Rev | | | ~ | | 1 | |
| | | | For | Rev | | | ~ | | | |
| | | | For | Rev | | | ~ | | | |
| | | | For | Rev | | | Au | |] | |
| | | | For | Rev | | | ~ | | | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4







Figure D.2 Phase Plots Measured by SASW Testing with 1-ft Receiver Spacing (SC7_F_21.DAT)



Figure D.3 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SC1_F_43.DAT)



Figure D.4 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SC2_F_43.DAT)



Figure D.5 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SC7_F_43.DAT)



Figure D.6 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SC8_F_43.DAT)



Figure D.7 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SC3_F_21.DAT)



Figure D.8 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SC3_F_43.DAT)



Figure D.9 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SC4_F_43.DAT)



Figure D.10 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SC5_F_21.DAT)



Figure D.11 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SC6_F_21.DAT)



Figure D.12 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SC5_F_43.DAT)



Figure D.13 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SC6_F_43.DAT)



Figure D.14 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_21.DAT)



Figure D.15 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_43.DAT)



Figure D.16 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_21.DAT)



Figure D.17 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_43.DAT)



Figure D.18 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G2_F_21.DAT)



Figure D.19 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G3_F_21.DAT)

| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename | |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|----------------|--|
| 1 | 1 | 0 | 246 1 | | SC2 F 21.DAT | |
| 1 | 1 | 0 | 263 | 1 | | |
| 1 | 2 | 591 | 800 | - | $SC/_F_2I.DAT$ | |
| 2 | 1 | 0 | 139 | 1 | SCI E 42 DAT | |
| Z | 2 | 492 | 800 | - | SCI_F_45.DAT | |
| 2 | 1 | 0 | 156 | 1 | SC2 E 42 DAT | |
| 2 | 2 | 527 | 800 | - | 5C2_1_45.DA1 | |
| 2 | 1 | 0 | 141 | 1 | SC7 F 43 DAT | |
| 2 | 2 | 763 | 800 | - | SC7_F_45.DAT | |
| 2 | 1 | 0 | 142 | 1 | SC8 E 43 DAT | |
| 2 | 2 | 565 | 800 | - | 5C8_1_45.DA1 | |
| | 1 | 0 | 96 | 1 | | |
| 3 | 2 118 | | 141 1 | | SC3_F_21.DAT | |
| | 3 | 367 | 800 - | | | |
| | 1 | 0 | 59 | 1 | | |
| 6 | 2 109 | | 137 | 1 | SC3_F_43.DAT | |
| | 3 | 275 | 800 | - | | |
| | 1 | 0 | 58 | 1 | | |
| 6 | 2 | 117 | 136 | 1 | SC4_F_43.DAT | |
| | 3 | 322 | 800 | - | | |
| 0 | 1 | 0 | 38.5 | 1 | 005 E 01 DAT | |
| 9 | 2 | 160 | 400 - | | SUS_F_2I.DAT | |
| 0 | 1 | 0 | 37.5 | 1 | CCC E 21 DAT | |
| 9 | 2 | 108.5 | 400 | - | 5C0_F_21.DA1 | |
| | 1 | 0 | 27.5 | 1 | | |
| 18 | 2 | 29 | 32 | 1 | SC5_F_43.DAT | |
| | 3 | 109 | 400 | - | | |
| | 1 | 0 | 25.5 | 1 | | |
| 18 | 2 | 27.5 | 31.5 | 1 | SC6_F_43.DAT | |
| | 3 | 118 | 400 | - | | |
| 0.5 | 1 | 0 | 17 | 1 | | |
| 25 | 2 | 91.5 | 100 | - | GI_F_2I.DAT | |

Table D.1 Tables of Masking Parameters Used on Data Collected during First Site Visit at Site C

Performed by <u>Liabei</u> Checked by <u>Jin-Cheng</u> Lin.

| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename | |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|-------------|--|
| 25 | 1 | 0 | 16.62 | 1 | | |
| 23 | 2 | 90.88 | 100 | | 01_F_43.DA1 | |
| 1. Sectores 1. | 1 | 0 | 14.88 | 1 | G4_F_21.DAT | |
| 25 | 2 | 20 | 25.12 | 1 | | |
| | 3 | 70.88 | 100 | - | | |
| | 1 | 0 | 16.38 | 1 | | |
| 25 | 2 | 21.62 | 28.12 | 1 | G4_F_43.DAT | |
| | 3 | 88.88 | 100 | - | | |
| 50 | 1 | 0 | 8.12 | 1 | C2 E 21 DAT | |
| 50 | 2 | 98 | 100 | - | G2_F_21.DA1 | |
| 50 | 1 0 | | 8.25 | 1 | C2 E 21 DAT | |
| | 2 | 62.88 | 100 | - 1 | U3_F_21.DA1 | |

Table D.2Tables of Masking Parameters Used on Data Collected during First Site Visit
at Site C (Continued)

____ Checked by <u>Jin-Cheng</u> Lin. Yin-Cheng Lin Performed by_ Jiabei Yuan



Figure D.20 Experimental Dispersion Curve Measured during First Site Visit at Site C at Vogtle, GA; Linear Wavelength Axis



Figure D.21 Experimental Dispersion Curve Measured during First Site Visit at Site C at Vogtle, GA; Logarithmic Wavelength Axis



Figure D.22 Experimental and Theoretical Dispersion Curves from Site C in First Site Visit at Vogtle, GA; Linear Wavelength Axis

Wavelength (m)



Figure D.23 Experimental and Theoretical Dispersion Curves from Site C in First Site Visit at Vogtle, GA; Logarithmic Wavelength Axis



Figure D.24 Shear Wave Velocity Profile Determined at Site C during First Site Visit at Vogtle, GA

| Table D.3 | Profile Parameters | Used to | o Develop | Preliminary | Theoretical | Dispersion |
|-----------|----------------------|------------|---------------|-------------|-------------|------------|
| | Curve at Site C in t | he First S | Site Visit at | Vogtle, GA | | |

| Layer No. | Thickness, ft | Depth to Top of Layer, ft | S-Wave Velocity, ft/s | Assumed Poisson's Ratio | P-Wave Velocity, ft/s | Assumed Total Unit Weight, pcf |
|---------------|---------------|------------------------------|--------------------------|----------------------------|--------------------------|-----------------------------------|
| 1 | 1 | 0.8 | 0.0 | 510 | 0.24 | 872 |
| 2 | 2 | 0.8 | 0.8 | 600 | 0.24 | 1026 |
| 3 | 3 | 2.0 | 1.6 | 700 | 0.24 | 1197 |
| 4 | 4 | 1.5 | 3.6 | 850 | 0.24 | 1453 |
| 5 | 5 | 2.3 | 5.1 | 950 | 0.24 | 1624 |
| 6 | 6 | 4.0 | 7.4 | 1050 | 0.24 | 1795 |
| 7 | 7 | 4.0 | 11.4 | 1150 | 0.24 | 1966 |
| 8 | 8 | 4.0 | 15.4 | 1250 | 0.24 | 2137 |
| 9 | 9 | 29.6 | 19.4 | 800 | 0.24 | 1368 |
| 10* | 10 | 16.4 | 49.0 | 800 | 0.24 | 1368 |
| $11^{*^{\#}}$ | 11 | 30.0 | 65.4 | 1900 | 0.42 | 5000 |
| 12*# | 12 | Half Space | 95.4 | 2200 | 0.38 | 5000 |

* Layer below maximum depth of the V_S Profile.

Layer below water tatble.

Performed by Jin-Chang Lin Checked by K. H. Stokocky Yin-Cheng Lin Kenneth H. Stokoe, II

Appendix E

SASW Measurements of First Site Visit at Vogtle, GA Site Location: Site D

| 1. Data Sheet(s) | E.2 |
|--|------|
| 2. Phase Plots from SASW Tests | E.4 |
| 3. Table of Masking Parameters | E.10 |
| 4. Experimental Dispersion Curves | E.11 |
| 5. Matching the Experimental and Theoretical | |
| Dispersion Curves | E.12 |
| 6. Shear Wave Velocity Profile | E.13 |
| 7. Table of Profile Parameters | E.13 |

|--|

Page ____ of ____

| Project | : Vogt | ile | |
|------------------------|-----------------|----------------|--|
| Location | : <u>SD</u> | (SA#< | 11 |
| Date/(Time) | 1: Dec, 9, | , 2007 (: | ~ :) |
| Personnel | : <u>Stokoe</u> | , Minjae | e, Yuan |
| Recorded b | y: Yu | an | and a second |
| Checked by | y:Mi | njae | co-autoritory-Barconantifictingayage |
| R1 I.D. : R2 I.D. : | GEC | 92003 92002 | Near Center |
| R3 I.D. : | GEE | 92001 | Far |

| Data Sheet # | : <u>SA # 4</u> |
|--------------|-----------------|
| Disk # : | SA #4 |

| Protection and a grant of the second | Sketch | | | | | | |
|--------------------------------------|--------|-------------------------------|--|--|--|--|--|
| 72 | | 17.78 24.4 6022447.737.888666 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | ~ | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| Distance (ft) | | Impact | | Impact | Record # | Freq. Range | Notos | |
|---|---|---------|------|--------|----------------|-------------|------------|-------|
| S - R1 | R1 - R2 | R2 - R3 | Dire | ction | Source | Necola # | (Hz) | NOIES |
| ١ | 1 | 2 | For | Rev | Email Hamps | 201 | 0 ~ 800 | |
| (| 1 | 2 | For | Bar | ~1 | SD2 | 0 -800 | |
| 3 | 3 | 6 | For | Rev | - 11 | 503 | 0-800 | |
| 3 | S | 6 | FOR | Rev | 11 | SD4 | 0-800 | |
| 9 | 9 | 18 | FOR | Rev | Medium | 505 | 0-400 | |
| 9 | 9 | 18 | For | Re | . 1 | SD6 | 0-400 | |
| | (| 2 | Ð | Rev | Shall | SD7 | 0-800 | |
| 1 | \backslash | 2 | For | Rev | 11 | SDS | 0~800 | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | n y | |
| | | | For | Rev | | | ~ | |
| | | , | For | Rev | | | ~ | |
| Themeses and the shear second s | and and a second state of a second | | For | Rev | | | ~ | |
| | | | For | Rev | | | ne | |
| | | | For | Rev | | | 20 | |
| | | | For | Rev | | | ~ | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4

| Project : Vogtle |
|-------------------------------------|
| Location : $G(SA \# 7)$ |
| Date/(Time) : De(1 9 12007(: - :) |
| Personnel : Stoke, Minjae, Tua |
| Recorded by : Yuan |
| Checked by : Minjae |
| $r = \frac{\sqrt{2}}{\sqrt{2}}$ |
| R11.D. : _ GGL 12005_ |
| R21.D.: GEC 92002 |
| R31.D.: (FEC 92001 |
| • |





| D | istance | (ft) | Imp | bact | Impact | Pacord # | Freq. Range | Notos |] |
|--------|---------|---------|------|-------|-----------|----------|-------------|-------|-----------|
| S - R1 | R1 - R2 | R2 - R3 | Dire | ction | Source | Necola # | (Hz) | Notes | 1 |
| 25 | 25 | 25 | For | Rev | Buildozer | GI | 0-100 | | When I |
| | | | For | Rev | | | ~ | - | 1 reverse |
| 60 | 50 | | FOR | Rev | ~ | GZ | 0 ~ 100 | | anectiv |
| | | | For | Rev | | | ~ | | watim i |
| 50 | 50 | | For | Rev | 11 | G3 | 0~ 00 | | aeophine: |
| | | | For | Rev | | | ~ | | not |
| 25 | 25 | 25 | For | Rev | 11 | G4 | 0-100 | | Changed |
| | | | For | Rev | | | ~~ | | 1 |
| | | | For | Rev | | | ~ | | 1/ |
| | | | For | Rev | | | ~ | | 17 |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ** | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | 76e | - | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4







Figure E.2 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SD2_F_43.DAT)



Figure E.3 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SD8_F_43.DAT)



Figure E.4 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SD3_F_21.DAT)



Figure E.5 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SD4_F_21.DAT)



Figure E.6 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SD4_F_43.DAT)



Figure E.7 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SD5_F_21.DAT)



Figure E.8 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SD6_F_21.DAT)



Figure E.9 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SD5_F_43.DAT)



Figure E.10 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SD6_F_43.DAT)



Figure E.11 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_21.DAT)



Figure E.12 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing $(G1_F_{43.DAT})$



Figure E.13 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_21.DAT)



Figure E.14 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing $(G4_F_43.DAT)$



Figure E.15 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G2_F_21.DAT)



Figure E.16 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G3_F_21.DAT)

| Receiver Spacing (ft) | Masking Interval | Masking Start Frequency, Hz | Masking Stop Frequency, Hz | Number of Jumps | Filename | |
|--------------------------|---------------------|--------------------------------|-------------------------------|--------------------|--------------|--|
| | 1 | | 252 | 1 | | |
| 1 | 2 | 260 | 233 | 1 | SD7_F_21.DAT | |
| | 1 | 0 | 128 | | | |
| 2 | 2 | 164 | 800 | 1 | SD2_F_43.DAT | |
| | 1 | | 137 | - 1 | | |
| 2 | 2 | 450 | 800 | 1 | SD8_F_43.DAT | |
| | | 0 | 100 | - 1 | | |
| 3 | 2 | 116 | 133 | 1 | SD3 F 21 DAT | |
| 5 | 3 | 173 | 800 | 1 | 5D5_1_21.DA1 | |
| | 1 | 0 | 96 | 1 | | |
| 3 | 2 | 107 | 136 | 1 | SD4 F 21 DAT | |
| 5 | 3 | 355 | 800 | - | | |
| | 1 | 0 | 59 | 1 | | |
| 6 | 2 | 105 | 134 | 1 | SD4 F 43 DAT | |
| Ŭ | 3 | 213 | 800 | - | | |
| | 1 | 0 | 42.5 | 1 | | |
| 9 | 2 | 154 | 400 | - | SD5_F_21.DAT | |
| - | 1 | 0 | 43 | 1 | | |
| 9 | 2 | 2 171.5 400 - | | | SD6_F_21.DAT | |
| | 1 | 0 | 25 | 1 | | |
| 18 | 2 | 29 | 30.5 | 1 | SD5 F 43.DAT | |
| | 3 | 108.5 | 400 | | | |
| 10 | 1 | 0 | 32.5 | 1 | | |
| 18 | 2 | 2 115 400 | | 100 | SD6_F_43.DA1 | |
| 25 | 1 | 0 | 17 | 1 | CIE DIDAT | |
| 23 | 2 91.5 | | 100 | - | GI_F_21.DAT | |
| 25 | 1 | 0 | 16.62 1 | | C1 E 42 DAT | |
| 23 | 2 | 90.88 | 100 | - | GI_F_43.DAT | |
| | 1 | 0 | 14.88 | 1 | | |
| 25 | 2 | 20 | 25.12 | 1 | G4_F_21.DAT | |
| | 3 | 70.88 | 100 | - | | |
| | 1 | 0 | 16.38 | 1 | | |
| 25 | 2 | 21.62 | 28.12 | 1 | G4_F_43.DAT | |
| | 3 | 88.88 | 100 | - | | |
| 50 | 1 | 0 | 8.12 | 1 | G2 = 21 DAT | |
| 50 | 2 | 98 | 100 | | 02_1_21.DA1 | |
| 50 | 1 | 0 | 8.25 | 1 | G3 E 21 DAT | |
| 50 | 2 | 62.88 | 100 | - | 05_1_21.DA1 | |

 Table E.1
 Tables of Masking Parameters Used on Data Collected during First Site Visit at Site D

____ Checked by <u>Jin-Cheng</u> Lin. Performed by_____ Jiabei Jiabei Yuan



Figure E.17 Experimental Dispersion Curve Measured during First Site Visit at Site D at Vogtle, GA; Linear Wavelength Axis

Wavelength (m)



Figure E.18 Experimental Dispersion Curve Measured during First Site Visit at Site D at Vogtle, GA; Logarithmic Wavelength Axis



Figure E.19 Experimental and Theoretical Dispersion Curves from Site D in First Site Visit at Vogtle, GA; Linear Wavelength Axis



Figure E.20 Experimental and Theoretical Dispersion Curves from Site D in First Site Visit at Vogtle, GA; Logarithmic Wavelength Axis



Figure E.21 Shear Wave Velocity Profile Determined at Site D during First Site Visit at Vogtle, GA

| Table E.2 | Profile Parameters | Used to | Develop | Preliminary | Theoretical | Dispersion |
|-----------|----------------------|-------------|--------------|-------------|-------------|------------|
| | Curve at Site D in t | he First Si | ite Visit at | Vogtle, GA | | |

| Layer No. | Thickness, ft | Depth to Top of Layer, ft | S-Wave Velocity, ft/s | Assumed Poisson's Ratio | P-Wave Velocity, ft/s | Assumed Total Unit Weight, pcf |
|------------------|---------------|------------------------------|--------------------------|----------------------------|--------------------------|-----------------------------------|
| 1 | 1.1 | 0.0 | 520 | 0.24 | 889 | 128 |
| 2 | 0.7 | 1.1 | 540 | 0.24 | 923 | 128 |
| 3 | 1.8 | 1.8 | 750 | 0.24 | 1282 | 128 |
| 4 | 1.5 | 3.6 | 850 | 0.24 | 1453 | 128 |
| 5 | 2.3 | 5.1 | 950 | 0.24 | 1624 | 128 |
| 6 | 4.0 | 7.4 | 1050 | 0.24 | 1795 | 128 |
| 7 | 4.0 | 11.4 | 1150 | 0.24 | 1966 | 128 |
| 8 | 4.0 | 15.4 | 1250 | 0.24 | 2137 | 128 |
| 9 | 29.6 | 19.4 | 800 | 0.24 | 1368 | 128 |
| 10* | 16.4 | 49.0 | 800 | 0.24 | 1368 | 128 |
| 11* [#] | 30.0 | 65.4 | 1900 | 0.42 | 5000 | 135 |
| 12*# | Half Space | 95.4 | 2200 | 0.38 | 5000 | 135 |

* Layer below maximum depth of the V_S Profile.

Layer below water tatble.

tokocy Performed by <u>Jin-Cheng Lin</u>Checked by_ Yin-Cheng Lin Kenneth H. Stokoe, II

Appendix F

SASW Measurements of First Site Visit at Vogtle, GA Site Location: Site E

| 1. Data Sheet(s) | F.2 |
|--|------|
| 2. Phase Plots from SASW Tests | F.4 |
| 3. Table of Masking Parameters | F.10 |
| 4. Experimental Dispersion Curves | F.12 |
| 5. Matching the Experimental and Theoretical | |
| Dispersion Curves | F.13 |
| 6 Shaan Waya Valagity Drofila | F 11 |
| o. Shear wave velocity Prome | Г.14 |

Page _ of _ [



| Disk # : | L# A2 | | | | |
|----------|--------|--|--|--|--|
| | Sketch | | | | |
| | ORCION | | | | |
| | | | | | |
| | | | | | |

Data Sheet #: SA# 5

| Distance (ft) | | Impact | | Impact | Record # | Freq. Range | Notes | |
|---------------|---------|---------|-----------|--------|-----------------|-------------|----------|----------------|
| S - R1 | R1 - R2 | R2 - R3 | Direction | | Source | Record # | (Hz) | Notes |
| | | 2 | Ð | Rev | Strav Hanner | SEI | 0 ~ 800 | > Held degreen |
| | 1 | 2 | For | Rey | ~ | SE2 | 0 ~ 800 | 1 |
| 3 | 3 | 6 | For | Rey | ~1 | SE3 | 0 ~ 800 | |
| 3 | 3 | 6 | E | Rev | N | SE4 | 0 ~ 8.20 | |
| 91 | 9 | (8) | For | Rev | Mammer | SES | 0 ~ 4600 | |
| 9 | 2 | 18 | For | Res | 1 | SE6 | 0-400 | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |
| | | | For | Rev | | | ~ | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4

| Project : <u>Vogtle</u> |
|---------------------------------------|
| $_ocation : \underline{G(SA \# 7)}$ |
| Date/(Time) : $e(1 9 , 2007(: ~ :)$ |
| Personnel : Stokoe, Milijae, Tuan |
| Recorded by : Yuan |
| Checked by : Minjae |
| PILD: GEC 91003 |
| R21.D.: GIEC (2002 |
| R31.D.: GEC 92001 |





| Distance (ft) | | Distance (ft) Impact | | Impact Record # | Freq. Range | Notoc | | | |
|---------------|----------------------|----------------------|-----------|-----------------|-------------|----------|---------|-------|------------|
| S - R1 | - R1 R1 - R2 R2 - R3 | | Direction | | Source | Necolu # | (Hz) | Notes | |
| 25 | 25 | 25 | For | Rev | Bulldozer | GI | 0-100 | | When I |
| | | | For | Rev | | | ~ | | 1 directiv |
| 60 | 50 | | FOD | Rev | ~ | GZ | 0 - 100 | | land |
| | | | For | Rev | | | ~ | | Colatim (|
| 50 | 50 | | For | Rev | 15 | G3 | 0 - 100 | | Deephunei |
| | | | For | Rev | | | ~ | | nor |
| 25 | 25 | 25 | For | Rev | ~ | G4 | 0-100 | | Changed |
| | | | For | Rev | | | ~ | |]/ |
| | | | For | Rev | | | ~ | |]/ |
| | | | For | Rev | | | ~ | | μ |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |
| | | | For | Rev | | | ~ | | |

* Autosequence 3R_SASW saves F_2/1, C_2/1, F_4/3, C_4/3, Lin_1, Lin_2, Lin_4

* Autosequence 3R_SEWPSIN saves F_2/1, Var_2, F_4/3, Var_4, Lin_1, Lin_2, Lin_4







Figure F.2 Phase Plots Measured by SASW Testing with 1-ft Receiver Spacing (SE2_F_21.DAT)



Figure F.3 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SE1_F_43.DAT)



Figure F.4 Phase Plots Measured by SASW Testing with 2-ft Receiver Spacing (SE2_F_43.DAT)



Figure F.5 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SE3_F_21.DAT)



Figure F.6 Phase Plots Measured by SASW Testing with 3-ft Receiver Spacing (SE4_F_21.DAT)



Figure F.7 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SE3_F_43.DAT)



Figure F.8 Phase Plots Measured by SASW Testing with 6-ft Receiver Spacing (SE4_F_43.DAT)



Figure F.9 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SE5_F_21.DAT)



Figure F.10 Phase Plots Measured by SASW Testing with 9-ft Receiver Spacing (SE6_F_21.DAT)



Figure F.11 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SE5_F_43.DAT)



Figure F.12 Phase Plots Measured by SASW Testing with 18-ft Receiver Spacing (SE6_F_43.DAT)


Figure F.13 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_21.DAT)



Figure F.14 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G1_F_43.DAT)



Figure F.15 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing $(G4_F_{21.DAT})$



Figure F.16 Phase Plots Measured by SASW Testing with 25-ft Receiver Spacing (G4_F_43.DAT)



Figure F.17 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G2_F_21.DAT)



Figure F.18 Phase Plots Measured by SASW Testing with 50-ft Receiver Spacing (G3_F_21.DAT)