APPENDIX F.5

UNCONFINED COMPRESSIVE STRENGTH TESTS ON ROCK CORE

NORTH ANNA COL

DATA REPORT REV. 0
JANUARY 23, 2007

MACTEC PROJECT NO. 6468-06-1472

Tice, Al

From: Davie, John [jdavie@bechtel.com]
Sent: Wednesday, November 29, 2006 8:08 AM
To: Tice, Al
Cc: Baker, Richard
Subject: RE: Rock cores

Al,

For the chipped cores, I would go ahead and test them, and make a note about the chipping somewhere in the results sheet. If you think the fracture in the one core will significantly impact the result, then I would not test it.

John

From: Tice, Al [mailto:JATICE@mactec.com]
Sent: Wednesday, November 29, 2006 7:31 AM
To: Davie, John
Subject: Rock cores

The lab has noted the following cores that were damaged in the preparation process. The cores are weathered rock, and during the end preparation process, they developed chips on the core edge and one was fractured. Due to the nature of this rock, any rock resubmitted of the same type, would probably yield the same results. Please advise.

B907 90.0 UCSS

B920 90.15 UC

B910 91.1 UCSS

B907 51.85 UC

B901 117.45 UCSS – Fractured, not tested JDJ 1-19-07

J. Allan Tice, P. E.

Senior Principal/Assistant Vice President

MACTEC

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MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

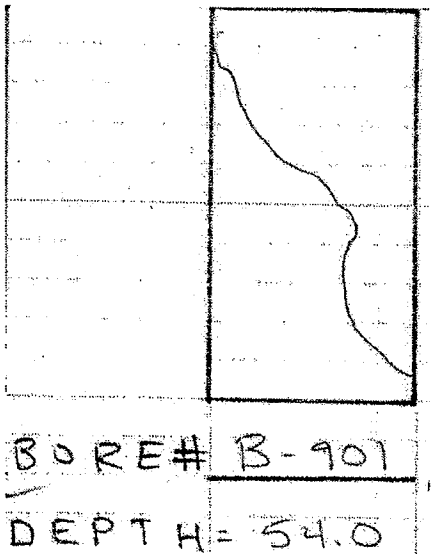
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 901
Sample Depth (ft): 54
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.492**
Specimen Length, inch	**5.273**
Length/Diameter Ratio	**2.12**
Unit Weight (lbs/ft^3)	**160**
Test Duration (Time to Failure in Minutes)	**4.4**
Unconfined Compressive Strength, psi (from test)	**4,347**
Unconfined Compressive Strength, psi (with L/D correction)	**4,375**
Type of Break	**Shear**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

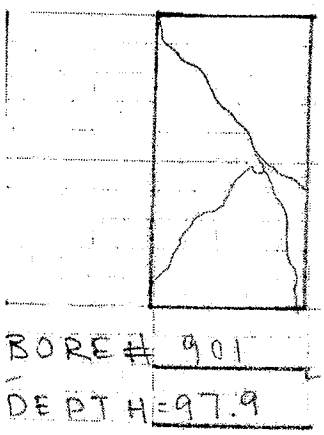
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 901
Sample Depth (ft): 97.9
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DJC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.500
Specimen Length, inch	5.341
Length/Diameter Ratio	2.14
Unit Weight (lbs/ft^3)	162
Test Duration (Time to Failure in Minutes)	5.5
Unconfined Compressive Strength, psi (from test)	12,533
Unconfined Compressive Strength, psi (with L/D correction)	12,629
Type of Break	Cone & Shear

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

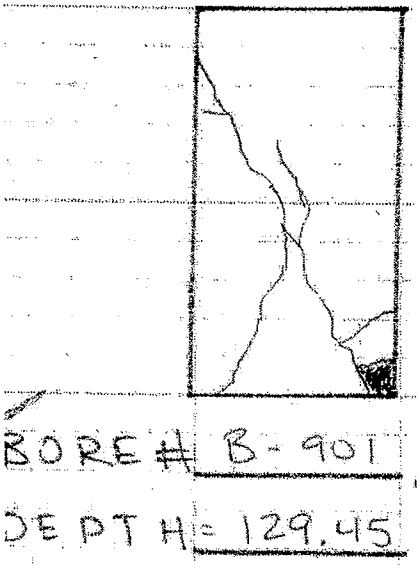
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 901
Sample Depth (ft): 129.45
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DSC
Review Date: 1-22-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.492
Specimen Length, inch	5.349
Length/Diameter Ratio	2.15
Unit Weight (lbs/ft^3)	164
Test Duration (Time to Failure in Minutes)	6.1
Unconfined Compressive Strength, psi (from test)	14,054
Unconfined Compressive Strength, psi (with L/D correction)	14,171
Type of Break	Cone & Shear

Comments: _____



MACTEC

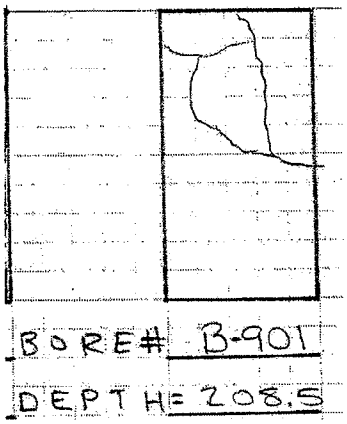
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**901**		
Sample Depth (ft):	**208.5**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DSC
Test Date:	**11/30/2006**	**Review Date:**	1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.396**
Specimen Length, inch	**5.316**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**8.0**
Unconfined Compressive Strength, psi (from test)	**12,626**
Unconfined Compressive Strength, psi (with L/D correction)	**12,777**
Type of Break	**Shear**

Comments: _____



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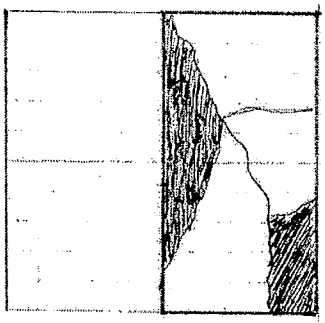
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**901**		
Sample Depth (ft):	**240.5**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DT
Test Date:	**11/30/2006**	**Review Date:**	1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.388**
Specimen Length, inch	**5.348**
Length/Diameter Ratio	**2.24**
Unit Weight (lbs/ft^3)	**165**
Test Duration (Time to Failure in Minutes)	**7.2**
Unconfined Compressive Strength, psi (from test)	**23,315**
Unconfined Compressive Strength, psi (with L/D correction)	**23,619**
Type of Break	**Cone & Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

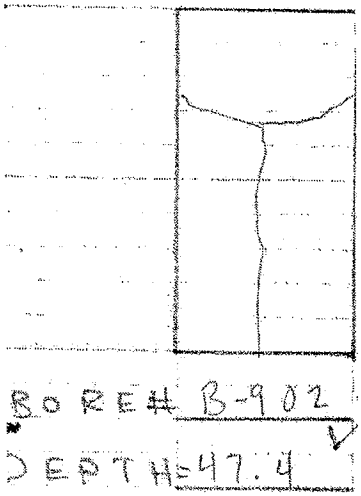
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 902
Sample Depth (ft): 47.4
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.400**
Specimen Length, inch	**5.345**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**6.6**
Unconfined Compressive Strength, psi (from test)	**20,750**
Unconfined Compressive Strength, psi (with L/D correction)	**21,007**
Type of Break	**Shear**

Comments: _____



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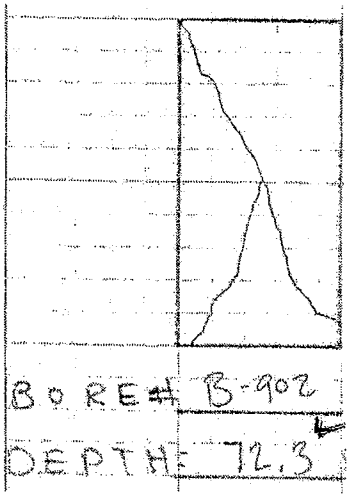
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**902**		
Sample Depth (ft):	**72.3**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	PSC
Test Date:	**12/1/2006**	**Review Date:**	1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.398**
Specimen Length, inch	**5.339**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**164**
Test Duration (Time to Failure in Minutes)	**7.2**
Unconfined Compressive Strength, psi (from test)	**24,794**
Unconfined Compressive Strength, psi (with L/D correction)	**25,100**
Type of Break	**Cone & Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

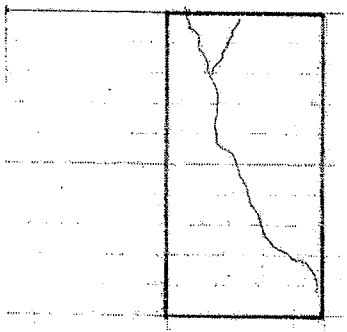
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 902
Sample Depth (ft): 141.9
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.400**
Specimen Length, inch	**5.312**
Length/Diameter Ratio	**2.21**
Unit Weight (lbs/ft^3)	**170**
Test Duration (Time to Failure in Minutes)	**5.8**
Unconfined Compressive Strength, psi (from test)	**6,901**
Unconfined Compressive Strength, psi (with L/D correction)	**6,982**
Type of Break	**Shear**

Comments: _____



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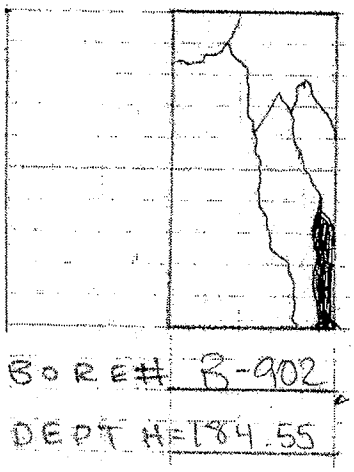
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**902**		
Sample Depth (ft):	**184.55**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DSC
Test Date:	**11/30/2006**	**Review Date:**	1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.398**
Specimen Length, inch	**5.364**
Length/Diameter Ratio	**2.24**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**7.6**
Unconfined Compressive Strength, psi (from test)	**26,956**
Unconfined Compressive Strength, psi (with L/D correction)	**27,303**
Type of Break	**Cone & Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

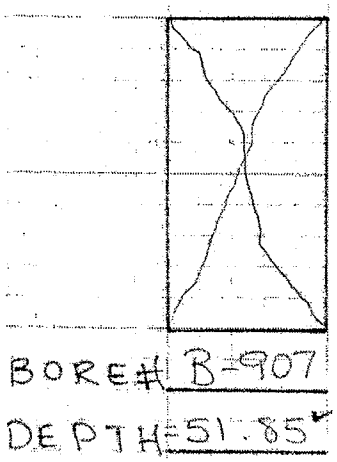
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**907**
Sample Depth (ft):	**51.85**
Tested By:	**Jacob B. Mock**
Test Date:	**11/30/2006**

Reviewed By: DSC
Review Date: 1-22-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.447**
Specimen Length, inch	**5.290**
Length/Diameter Ratio	**2.16**
Unit Weight (lbs/ft^3)	**152**
Test Duration (Time to Failure in Minutes)	**12.4**
Unconfined Compressive Strength, psi (from test)	**948**
Unconfined Compressive Strength, psi (with L/D correction)	**957**
Type of Break	**Shear**

Comments: Test specimen ends slightly chipped. Tested "as is" with approval from Bechtel.



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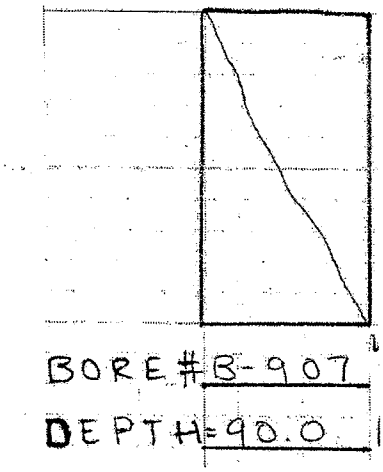
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**907**		
Sample Depth (ft):	**90**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DSC
Test Date:	**12/13/2006**	**Review Date:**	1-22-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.462**
Specimen Length, inch	**5.234**
Length/Diameter Ratio	**2.13**
Unit Weight (lbs/ft^3)	**155**
Test Duration (Time to Failure in Minutes)	**9.4**
Unconfined Compressive Strength, psi (from test)	**746**
Unconfined Compressive Strength, psi (with L/D correction)	**751**
Type of Break	**Shear**

Comments: Test assigned for stress-strain, but side roughness prevented attachment of strain gages. Test was changed to unconfined only with approval by Bechtel.



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Unconfined Compressive Strength of Intact Rock Core Specimens

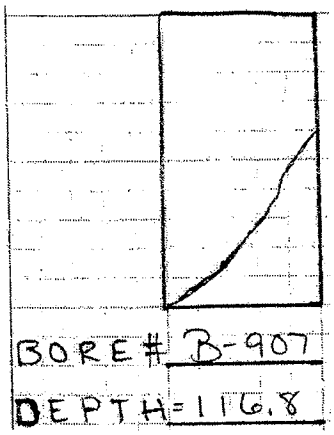
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**907**
Sample Depth (ft):	**116.8**
Tested By:	**Jacob B. Mock**
Test Date:	**11/30/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.470**
Specimen Length, inch	**5.271**
Length/Diameter Ratio	**2.13**
Unit Weight (lbs/ft^3)	**173**
Test Duration (Time to Failure in Minutes)	**6.2**
Unconfined Compressive Strength, psi (from test)	**4,564**
Unconfined Compressive Strength, psi (with L/D correction)	**4,599**
Type of Break	**Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

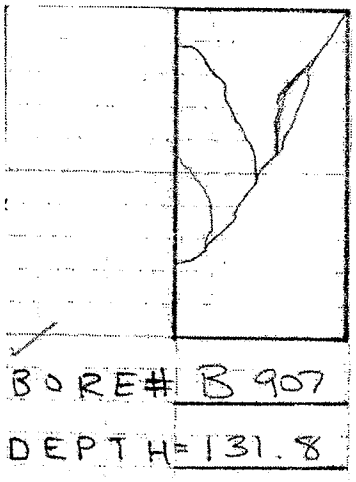
ASTM D 7012-04

Project Name:	North Anna COL
Project Number:	6468061472
Boring Number:	907
Sample Depth (ft):	131.8
Tested By:	Jacob B. Mock
Test Date:	12/1/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.482
Specimen Length, inch	5.318
Length/Diameter Ratio	2.14
Unit Weight (lbs/ft^3)	173
Test Duration (Time to Failure in Minutes)	4.5
Unconfined Compressive Strength, psi (from test)	8,451
Unconfined Compressive Strength, psi (with L/D correction)	8,519
Type of Break	Cone & Shear

Comments: _____



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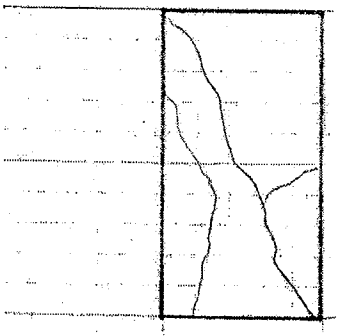
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**907**		
Sample Depth (ft):	**200**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DSC
Test Date:	**12/1/2006**	**Review Date:**	1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.498**
Specimen Length, inch	**5.349**
Length/Diameter Ratio	**2.14**
Unit Weight (lbs/ft^3)	**165**
Test Duration (Time to Failure in Minutes)	**7.0**
Unconfined Compressive Strength, psi (from test)	**20,007**
Unconfined Compressive Strength, psi (with L/D correction)	**20,166**
Type of Break	**Cone & Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

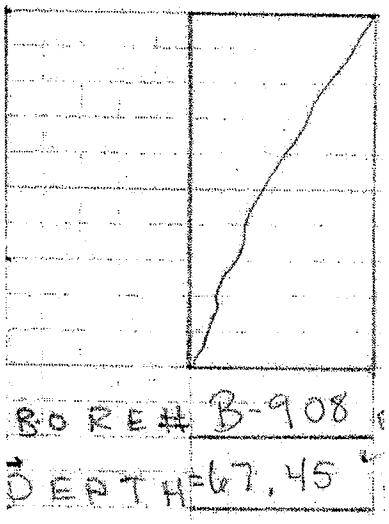
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**908**
Sample Depth (ft):	**67.45**
Tested By:	**Jacob B. Mock**
Test Date:	**12/12/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.385**
Specimen Length, inch	**5.319**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**6.0**
Unconfined Compressive Strength, psi (from test)	**5,408**
Unconfined Compressive Strength, psi (with L/D correction)	**5,476**
Type of Break	**Shear**

Comments:



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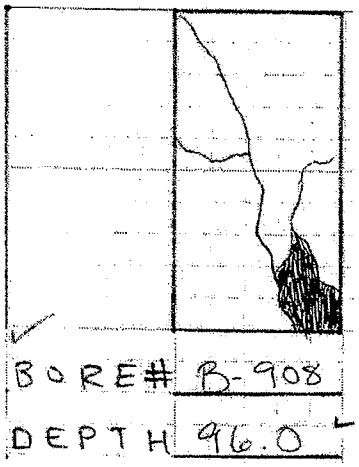
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**908**		
Sample Depth (ft):	**96**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DSC
Test Date:	**12/12/2006**	**Review Date:**	1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.392**
Specimen Length, inch	**5.307**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**6.2**
Unconfined Compressive Strength, psi (from test)	**16,961**
Unconfined Compressive Strength, psi (with L/D correction)	**17,164**
Type of Break	**Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

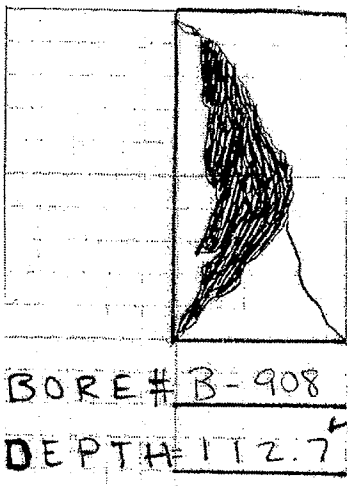
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 908
Sample Depth (ft): 112.7
Tested By: Jacob B. Mock
Test Date: 12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.381**
Specimen Length, inch	**5.316**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**178**
Test Duration (Time to Failure in Minutes)	**5.6**
Unconfined Compressive Strength, psi (from test)	**15,092**
Unconfined Compressive Strength, psi (with L/D correction)	**15,284**
Type of Break	**Shear**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

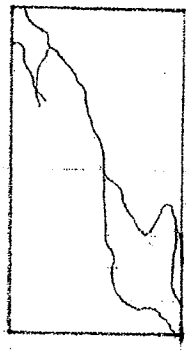
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 908
Sample Depth (ft): 146.8
Tested By: Jacob B. Mock
Test Date: 12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.382
Specimen Length, inch	5.305
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	173
Test Duration (Time to Failure in Minutes)	5.3
Unconfined Compressive Strength, psi (from test)	7,592
Unconfined Compressive Strength, psi (with L/D correction)	7,687
Type of Break	Shear

Comments: _____



BORE # B-908
DEPTH: 146.8

MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

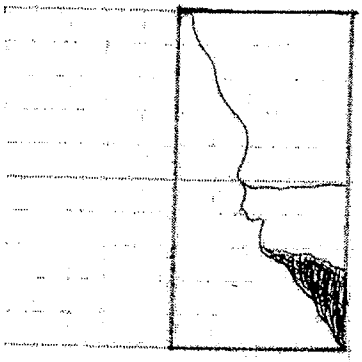
ASTM D 7012-04

Project Name:	North Anna COL
Project Number:	6468061472
Boring Number:	909
Sample Depth (ft):	96.5
Tested By:	Jacob B. Mock
Test Date:	11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.389
Specimen Length, inch	5.279
Length/Diameter Ratio	2.21
Unit Weight (lbs/ft^3)	190
Test Duration (Time to Failure in Minutes)	4.5
Unconfined Compressive Strength, psi (from test)	5,830
Unconfined Compressive Strength, psi (with L/D correction)	5,897
Type of Break	Shear

Comments: _____



BORE # B-909

DEPTH = 96.5'

MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

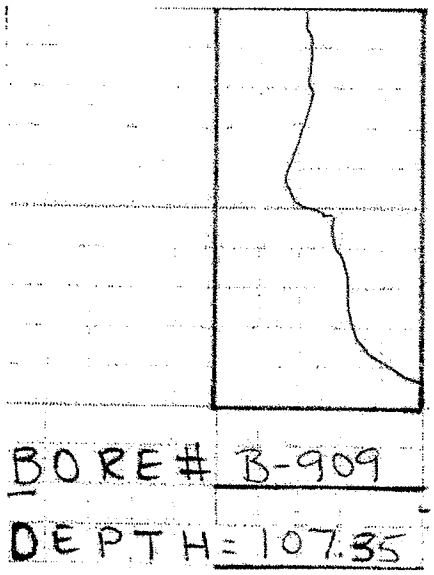
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 909
Sample Depth (ft): 107.35
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.386**
Specimen Length, inch	**5.349**
Length/Diameter Ratio	**2.24**
Unit Weight (lbs/ft^3)	**179**
Test Duration (Time to Failure in Minutes)	**4.0**
Unconfined Compressive Strength, psi (from test)	**3,887**
Unconfined Compressive Strength, psi (with L/D correction)	**3,938**
Type of Break	**Shear**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

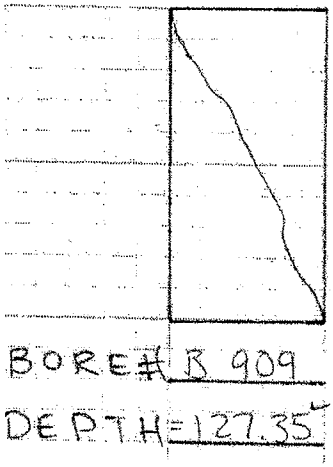
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 909
Sample Depth (ft): 127.35
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.388
Specimen Length, inch	5.349
Length/Diameter Ratio	2.24
Unit Weight (lbs/ft^3)	174
Test Duration (Time to Failure in Minutes)	5.4
Unconfined Compressive Strength, psi (from test)	8,062
Unconfined Compressive Strength, psi (with L/D correction)	8,167
Type of Break	Shear

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

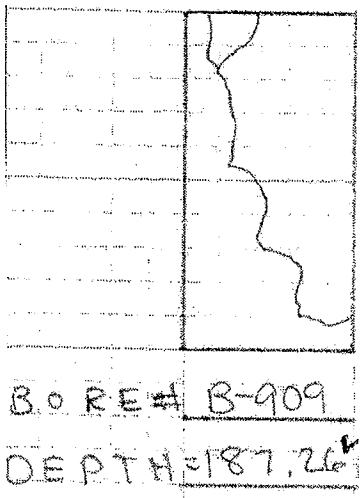
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**909**
Sample Depth (ft):	**187.26**
Tested By:	**Jacob B. Mock**
Test Date:	**11/30/2006**

Reviewed By: DJC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.392**
Specimen Length, inch	**5.317**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**175**
Test Duration (Time to Failure in Minutes)	**6.6**
Unconfined Compressive Strength, psi (from test)	**9,193**
Unconfined Compressive Strength, psi (with L/D correction)	**9,305**
Type of Break	**Shear**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

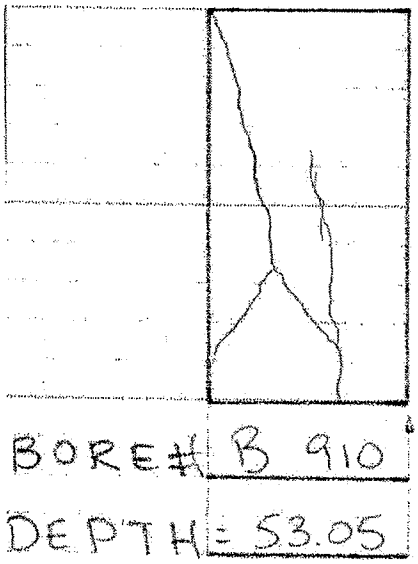
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**910**
Sample Depth (ft):	**53.05**
Tested By:	**Jacob B. Mock**
Test Date:	**12/1/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.378**
Specimen Length, inch	**5.268**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**159**
Test Duration (Time to Failure in Minutes)	**7.7**
Unconfined Compressive Strength, psi (from test)	**6,854**
Unconfined Compressive Strength, psi (with L/D correction)	**6,935**
Type of Break	**Shear**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

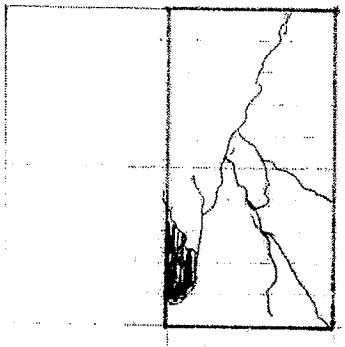
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 910
Sample Depth (ft): 120.9
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.396
Specimen Length, inch	5.271
Length/Diameter Ratio	2.20
Unit Weight (lbs/ft^3)	163
Test Duration (Time to Failure in Minutes)	7.9
Unconfined Compressive Strength, psi (from test)	9,293
Unconfined Compressive Strength, psi (with L/D correction)	9,395
Type of Break	Columnar

Comments:



BORE # B-910
DEPTH = 120.9'

MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

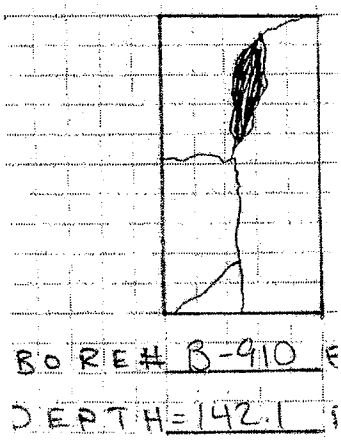
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 910
Sample Depth (ft): 142.1
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.402
Specimen Length, inch	5.353
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	168
Test Duration (Time to Failure in Minutes)	10.4
Unconfined Compressive Strength, psi (from test)	28,479
Unconfined Compressive Strength, psi (with L/D correction)	28,834
Type of Break	Cone & Shear

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

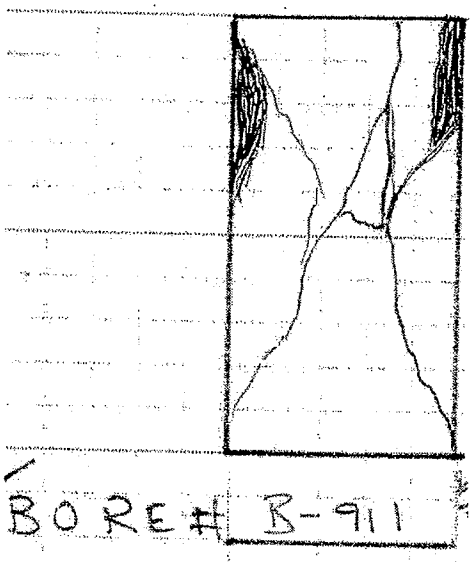
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 911
Sample Depth (ft): 44.25
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.377
Specimen Length, inch	5.285
Length/Diameter Ratio	2.22
Unit Weight (lbs/ft^3)	162
Test Duration (Time to Failure in Minutes)	6.6
Unconfined Compressive Strength, psi (from test)	10,086
Unconfined Compressive Strength, psi (with L/D correction)	10,209
Type of Break	Cone

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

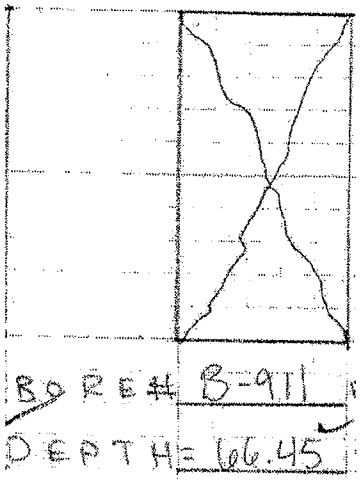
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**911**
Sample Depth (ft):	**66.45**
Tested By:	**Jacob B. Mock**
Test Date:	**11/30/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.395**
Specimen Length, inch	**5.345**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**164**
Test Duration (Time to Failure in Minutes)	**10.9**
Unconfined Compressive Strength, psi (from test)	**24,338**
Unconfined Compressive Strength, psi (with L/D correction)	**24,646**
Type of Break	**Cone**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

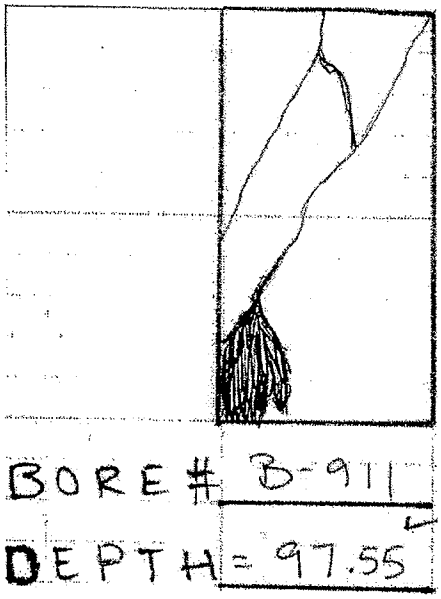
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 911
Sample Depth (ft): 97.55
Tested By: Jacob B. Mock
Test Date: 12/1/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.402**
Specimen Length, inch	**5.363**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**3.5**
Unconfined Compressive Strength, psi (from test)	**6,479**
Unconfined Compressive Strength, psi (with L/D correction)	**6,561**
Type of Break	**Shear**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

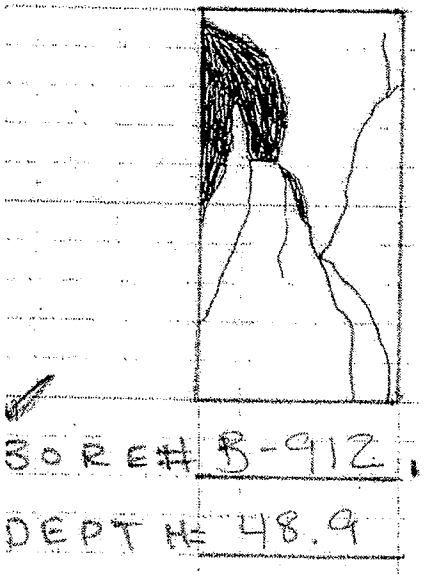
ASTM D 7012-04

Project Name:	North Anna COL
Project Number:	6468061472
Boring Number:	912
Sample Depth (ft):	48.9
Tested By:	Jacob B. Mock
Test Date:	12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.396**
Specimen Length, inch	**5.258**
Length/Diameter Ratio	**2.19**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**4.7**
Unconfined Compressive Strength, psi (from test)	**12,853**
Unconfined Compressive Strength, psi (with L/D correction)	**12,992**
Type of Break	**Cone & Shear**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

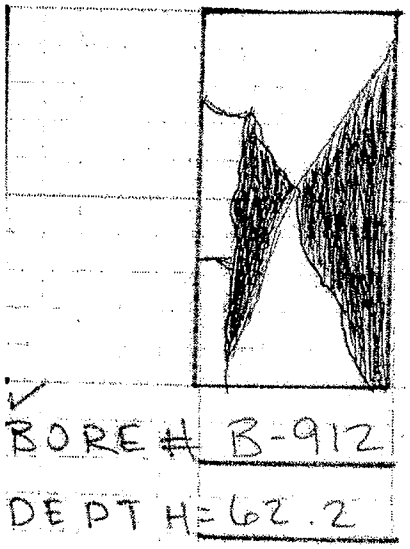
ASTM D 7012-04

Project Name:	North Anna COL
Project Number:	6468061472
Boring Number:	912
Sample Depth (ft):	62.2
Tested By:	Jacob B. Mock
Test Date:	12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.399
Specimen Length, inch	5.256
Length/Diameter Ratio	2.19
Unit Weight (lbs/ft^3)	164
Test Duration (Time to Failure in Minutes)	N/A
Unconfined Compressive Strength, psi (from test)	32,338
Unconfined Compressive Strength, psi (with L/D correction)	32,680
Type of Break	Cone & Shear

Comments: Test time was lost during data transfer from P3 strain indicator to laptop after test was complete.



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

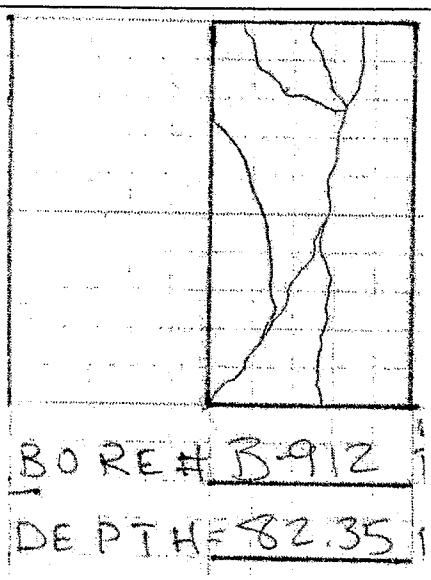
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**912**
Sample Depth (ft):	**82.35**
Tested By:	**Jacob B. Mock**
Test Date:	**12/12/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.403**
Specimen Length, inch	**5.250**
Length/Diameter Ratio	**2.18**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**8.6**
Unconfined Compressive Strength, psi (from test)	**27,079**
Unconfined Compressive Strength, psi (with L/D correction)	**27,356**
Type of Break	**Shear**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

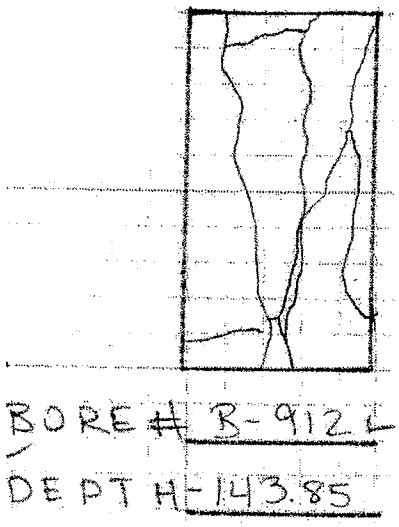
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**912**
Sample Depth (ft):	**143.85**
Tested By:	**Jacob B. Mock**
Test Date:	**12/12/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.403**
Specimen Length, inch	**5.256**
Length/Diameter Ratio	**2.19**
Unit Weight (lbs/ft^3)	**161**
Test Duration (Time to Failure in Minutes)	**5.4**
Unconfined Compressive Strength, psi (from test)	**15,832**
Unconfined Compressive Strength, psi (with L/D correction)	**15,996**
Type of Break	**Columnar**

Comments:



MACTEC

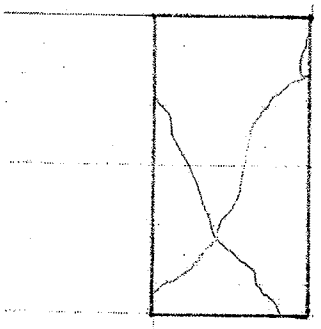
Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	**North Anna COL**		
Project Number:	**6468061472**		
Boring Number:	**914**		
Sample Depth (ft):	**63.75**		
Tested By:	**Jacob B. Mock**	**Reviewed By:**	DSC
Test Date:	**12/1/2006**	**Review Date:**	1-19-07

Rock Type	Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.396**
Specimen Length, inch	**5.341**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**169**
Test Duration (Time to Failure in Minutes)	**5.8**
Unconfined Compressive Strength, psi (from test)	**17,645**
Unconfined Compressive Strength, psi (with L/D correction)	**17,866**
Type of Break	**Cone**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

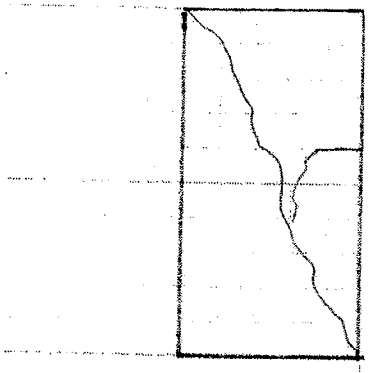
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**914**
Sample Depth (ft):	**75.25**
Tested By:	**Jacob B. Mock**
Test Date:	**11/30/2006**

Reviewed By: DSC
Review Date: 1-22-07

Rock Type	**Quartz Gneiss**
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.398**
Specimen Length, inch	**5.319**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**164**
Test Duration (Time to Failure in Minutes)	**10.8**
Unconfined Compressive Strength, psi (from test)	**36,169**
Unconfined Compressive Strength, psi (with L/D correction)	**36,600**
Type of Break	**Cone & Shear**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

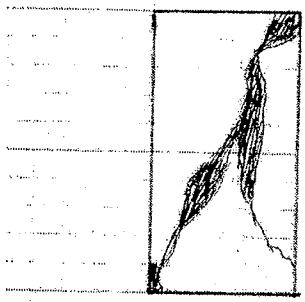
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 914
Sample Depth (ft): 120.55
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.393
Specimen Length, inch	5.315
Length/Diameter Ratio	2.22
Unit Weight (lbs/ft^3)	169
Test Duration (Time to Failure in Minutes)	6.0
Unconfined Compressive Strength, psi (from test)	17,727
Unconfined Compressive Strength, psi (with L/D correction)	17,942
Type of Break	Cone & Shear

Comments: _____



BORE # B-914
DEPTH = 120.55'

MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

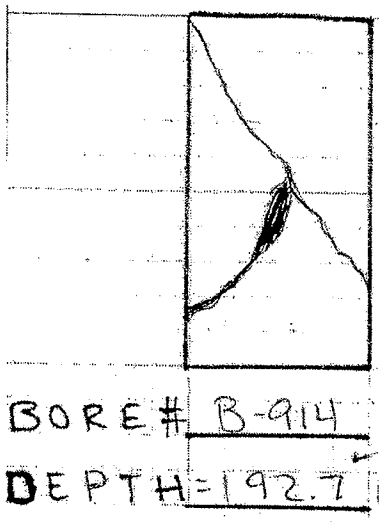
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 914
Sample Depth (ft): 192.7
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.400
Specimen Length, inch	5.319
Length/Diameter Ratio	2.22
Unit Weight (lbs/ft^3)	163
Test Duration (Time to Failure in Minutes)	9.3
Unconfined Compressive Strength, psi (from test)	29,808
Unconfined Compressive Strength, psi (with L/D correction)	30,162
Type of Break	Cone

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

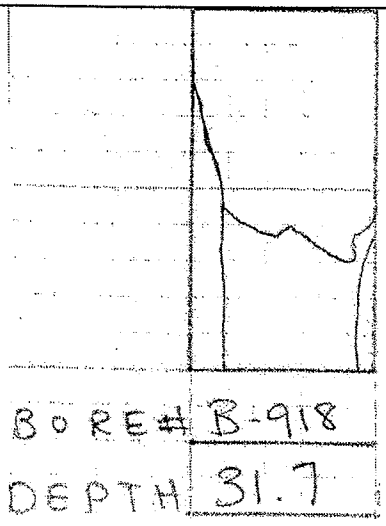
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 918
Sample Depth (ft): 31.7
Tested By: Jacob B. Mock
Test Date: 12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.385**
Specimen Length, inch	**5.285**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**164**
Test Duration (Time to Failure in Minutes)	**3.3**
Unconfined Compressive Strength, psi (from test)	**18,815**
Unconfined Compressive Strength, psi (with L/D correction)	**19,038**
Type of Break	**Shear**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

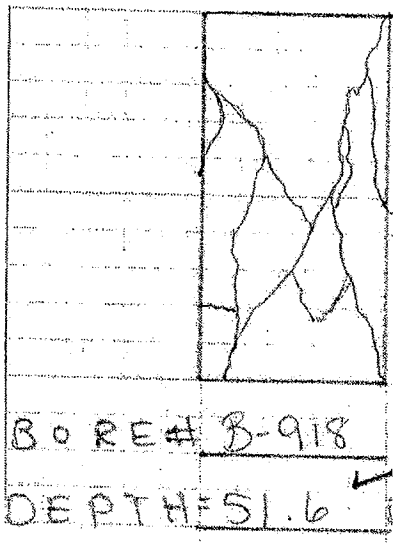
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 918
Sample Depth (ft): 51.6
Tested By: Jacob B. Mock
Test Date: 12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.396
Specimen Length, inch	5.285
Length/Diameter Ratio	2.21
Unit Weight (lbs/ft^3)	165
Test Duration (Time to Failure in Minutes)	5.0
Unconfined Compressive Strength, psi (from test)	15,236
Unconfined Compressive Strength, psi (with L/D correction)	15,409
Type of Break	Cone

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

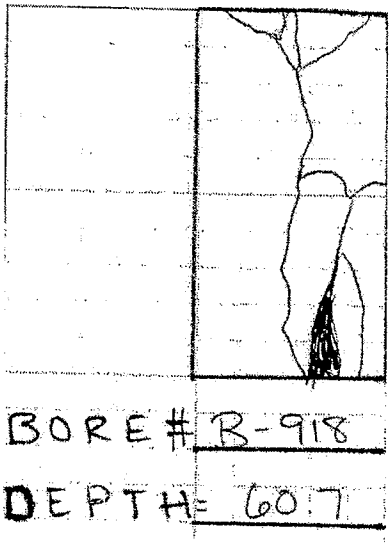
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 918
Sample Depth (ft): 60.7
Tested By: Jacob B. Mock
Test Date: 12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.399**
Specimen Length, inch	**5.321**
Length/Diameter Ratio	**2.22**
Unit Weight (lbs/ft^3)	**164**
Test Duration (Time to Failure in Minutes)	**5.9**
Unconfined Compressive Strength, psi (from test)	**20,816**
Unconfined Compressive Strength, psi (with L/D correction)	**21,064**
Type of Break	**Columnar**

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

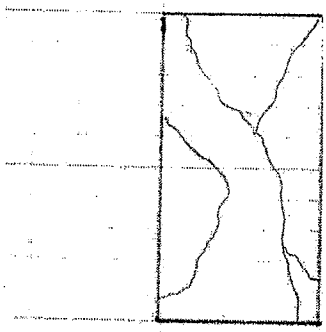
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 918
Sample Depth (ft): 122
Tested By: Jacob B. Mock
Test Date: 12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.404
Specimen Length, inch	5.250
Length/Diameter Ratio	2.18
Unit Weight (lbs/ft^3)	166
Test Duration (Time to Failure in Minutes)	7.6
Unconfined Compressive Strength, psi (from test)	33,270
Unconfined Compressive Strength, psi (with L/D correction)	33,610
Type of Break	Cone & Shear

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

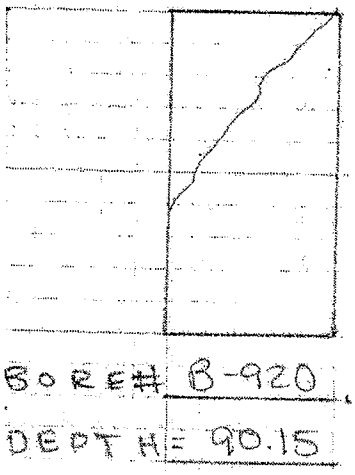
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 920
Sample Depth (ft): 90.15
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-22-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.385
Specimen Length, inch	5.278
Length/Diameter Ratio	2.21
Unit Weight (lbs/ft^3)	160
Test Duration (Time to Failure in Minutes)	6.6
Unconfined Compressive Strength, psi (from test)	1,010
Unconfined Compressive Strength, psi (with L/D correction)	1,021
Type of Break	Shear

Comments: Sample had chips on end. Tested "as is" with approval of Bechtel.



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

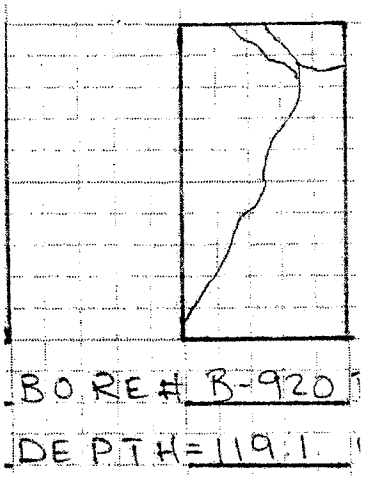
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 920
Sample Depth (ft): 119.1
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSS
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.386**
Specimen Length, inch	**5.329**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**181**
Test Duration (Time to Failure in Minutes)	**6.2**
Unconfined Compressive Strength, psi (from test)	**9,337**
Unconfined Compressive Strength, psi (with L/D correction)	**9,456**
Type of Break	**Shear**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

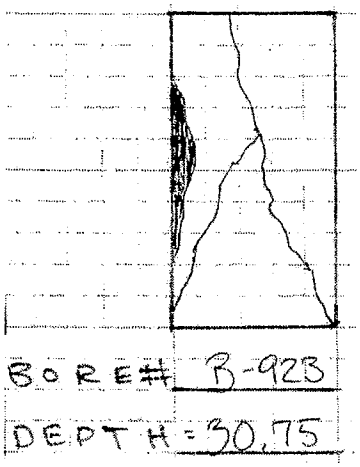
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 923
Sample Depth (ft): 30.75
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.391
Specimen Length, inch	5.349
Length/Diameter Ratio	2.24
Unit Weight (lbs/ft^3)	162
Test Duration (Time to Failure in Minutes)	9.7
Unconfined Compressive Strength, psi (from test)	26,439
Unconfined Compressive Strength, psi (with L/D correction)	26,779
Type of Break	Cone & Shear

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

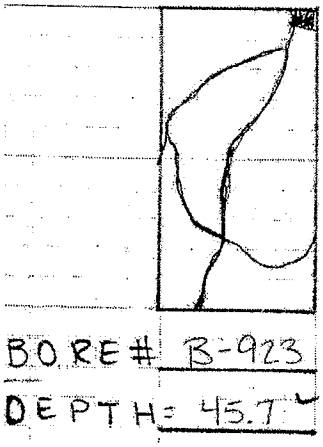
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 923
Sample Depth (ft): 45.7
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSS
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.392**
Specimen Length, inch	**5.328**
Length/Diameter Ratio	**2.23**
Unit Weight (lbs/ft^3)	**163**
Test Duration (Time to Failure in Minutes)	**10.2**
Unconfined Compressive Strength, psi (from test)	**13,312**
Unconfined Compressive Strength, psi (with L/D correction)	**13,477**
Type of Break	**Shear**

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

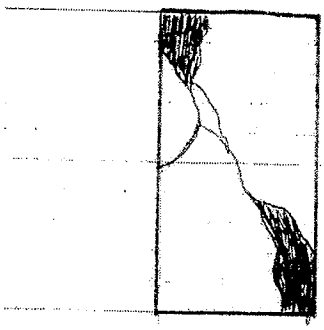
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 924
Sample Depth (ft): 21.7
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.387
Specimen Length, inch	5.333
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	162
Test Duration (Time to Failure in Minutes)	7.3
Unconfined Compressive Strength, psi (from test)	10,455
Unconfined Compressive Strength, psi (with L/D correction)	10,588
Type of Break	Shear

Comments:



BORE # B-924
DEPTH = 21.7

MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

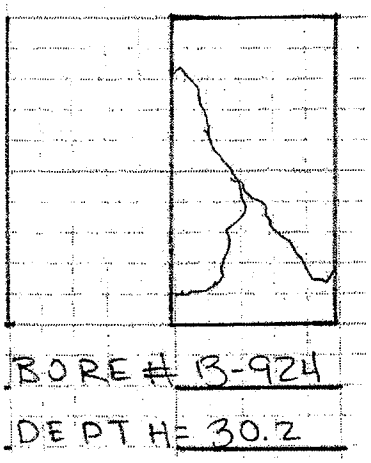
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 924
Sample Depth (ft): 30.2
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.389
Specimen Length, inch	5.346
Length/Diameter Ratio	2.24
Unit Weight (lbs/ft^3)	163
Test Duration (Time to Failure in Minutes)	8.2
Unconfined Compressive Strength, psi (from test)	14,918
Unconfined Compressive Strength, psi (with L/D correction)	15,110
Type of Break	Cone & Shear

Comments:



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Unconfined Compressive Strength of Intact Rock Core Specimens

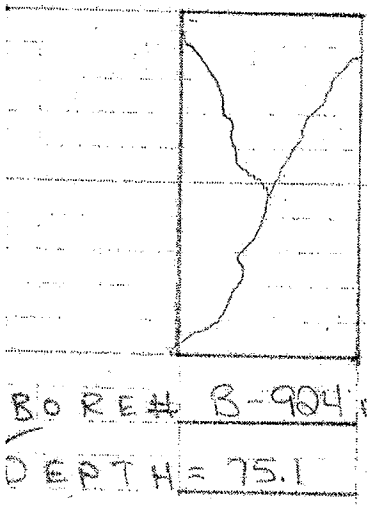
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 924
Sample Depth (ft): 75.1
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.395
Specimen Length, inch	5.333
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	179
Test Duration (Time to Failure in Minutes)	6.2
Unconfined Compressive Strength, psi (from test)	5,611
Unconfined Compressive Strength, psi (with L/D correction)	5,681
Type of Break	Cone & Shear

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

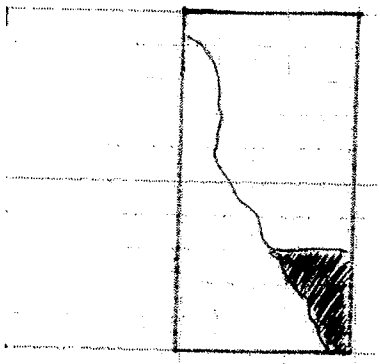
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 927
Sample Depth (ft): 42.95
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.392
Specimen Length, inch	5.347
Length/Diameter Ratio	2.24
Unit Weight (lbs/ft^3)	163
Test Duration (Time to Failure in Minutes)	8.6
Unconfined Compressive Strength, psi (from test)	19,044
Unconfined Compressive Strength, psi (with L/D correction)	19,288
Type of Break	Cone & Shear

Comments:



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Unconfined Compressive Strength of Intact Rock Core Specimens

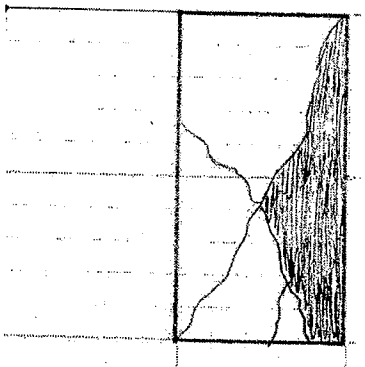
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 927
Sample Depth (ft): 74.9
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: PSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.390
Specimen Length, inch	5.326
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	164
Test Duration (Time to Failure in Minutes)	8.4
Unconfined Compressive Strength, psi (from test)	29,925
Unconfined Compressive Strength, psi (with L/D correction)	30,297
Type of Break	Cone

Comments:



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Unconfined Compressive Strength of Intact Rock Core Specimens

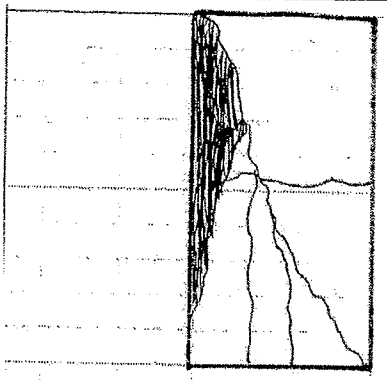
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 927
Sample Depth (ft): 96.25
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Quartz-Biotite Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.393
Specimen Length, inch	5.353
Length/Diameter Ratio	2.24
Unit Weight (lbs/ft^3)	164
Test Duration (Time to Failure in Minutes)	8.1
Unconfined Compressive Strength, psi (from test)	27,906
Unconfined Compressive Strength, psi (with L/D correction)	28,266
Type of Break	Cone & Shear

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

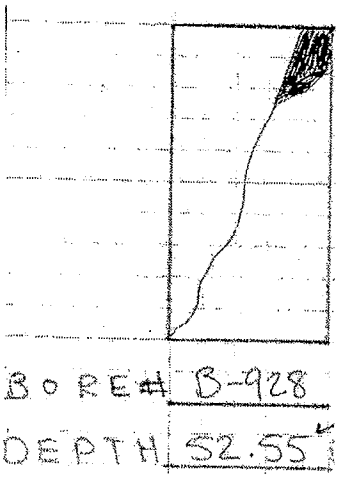
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 928
Sample Depth (ft): 52.55
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.388
Specimen Length, inch	5.333
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	153
Test Duration (Time to Failure in Minutes)	7.8
Unconfined Compressive Strength, psi (from test)	1,302
Unconfined Compressive Strength, psi (with L/D correction)	1,318
Type of Break	Shear

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

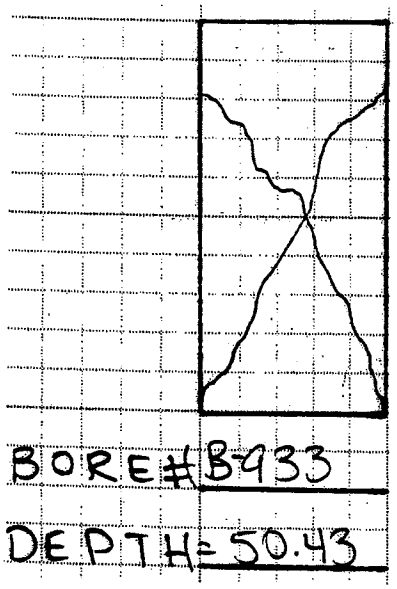
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 933
Sample Depth (ft): 50.45
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.390
Specimen Length, inch	5.334
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	163
Test Duration (Time to Failure in Minutes)	9.3
Unconfined Compressive Strength, psi (from test)	19,153
Unconfined Compressive Strength, psi (with L/D correction)	19,395
Type of Break	Cone

Comments:



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

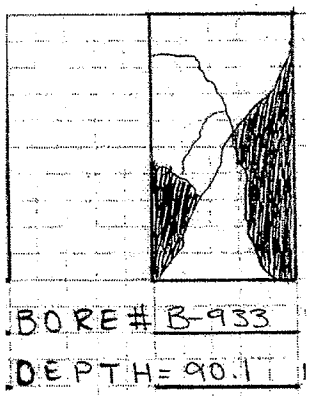
ASTM D 7012-04

Project Name: North Anna COL
Project Number: 6468061472
Boring Number: 933
Sample Depth (ft): 90.1
Tested By: Jacob B. Mock
Test Date: 11/30/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.388
Specimen Length, inch	5.316
Length/Diameter Ratio	2.23
Unit Weight (lbs/ft^3)	164
Test Duration (Time to Failure in Minutes)	10.5
Unconfined Compressive Strength, psi (from test)	30,616
Unconfined Compressive Strength, psi (with L/D correction)	30,993
Type of Break	Cone

Comments: _____



MACTEC

Unconfined Compressive Strength of Intact Rock Core Specimens

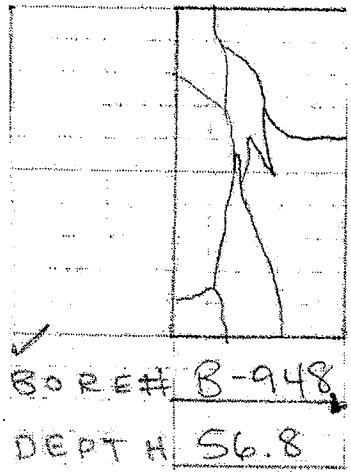
ASTM D 7012-04

Project Name:	**North Anna COL**
Project Number:	**6468061472**
Boring Number:	**948**
Sample Depth (ft):	**56.8**
Tested By:	**Jacob B. Mock**
Test Date:	**12/12/2006**

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	**As Received**
Specimen Diameter, inch	**2.393**
Specimen Length, inch	**5.283**
Length/Diameter Ratio	**2.21**
Unit Weight (lbs/ft^3)	**162**
Test Duration (Time to Failure in Minutes)	**6.2**
Unconfined Compressive Strength, psi (from test)	**16,896**
Unconfined Compressive Strength, psi (with L/D correction)	**17,089**
Type of Break	**Cone & Shear**

Comments: _____



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Unconfined Compressive Strength of Intact Rock Core Specimens

ASTM D 7012-04

Project Name:	North Anna COL
Project Number:	6468061472
Boring Number:	948
Sample Depth (ft):	76.1
Tested By:	Jacob B. Mock
Test Date:	12/12/2006

Reviewed By: DSC
Review Date: 1-19-07

Rock Type	Biotite-Quartz Gneiss
Moisture Condition	As Received
Specimen Diameter, inch	2.395
Specimen Length, inch	5.253
Length/Diameter Ratio	2.19
Unit Weight (lbs/ft^3)	167
Test Duration (Time to Failure in Minutes)	6.4
Unconfined Compressive Strength, psi (from test)	22,198
Unconfined Compressive Strength, psi (with L/D correction)	22,435
Type of Break	Cone & Shear

Comments: _____