APPENDIX 3

LABORATORY TESTING
APPENDIX 3.1
RAW LABORATORY DATA

3.1.1 – CNS 6.5 LABORATORY RESULTS
   3.1.1.1 – CNS 6.5 SHEAR STRENGTH TESTING RESULTS
   3.1.1.2 – CNS 6.5 CONSOLIDATION TESTING RESULTS
   3.1.1.3 – CNS 6.5 MOHR-COULOMB ENVELOPES

3.1.2 – CS 6.5 LABORATORY RESULTS
   3.1.2.1 – CS 6.5 SHEAR STRENGTH TESTING RESULTS
   3.1.2.2 – CS 6.5 CONSOLIDATION TESTING RESULTS
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3.1.3 – CS 8.5 LABORATORY RESULTS
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   3.1.3.2 – CS 8.5 CONSOLIDATION TESTING RESULTS
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   3.1.4.1 – WILL 3 SHEAR STRENGTH TESTING RESULTS
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   3.1.5.1 – WILL 5 SHEAR STRENGTH TESTING RESULTS
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   3.1.6.2 – KIDD 2.5 CONSOLIDATION TESTING RESULTS
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   3.1.7.1 – KIDD 4.5 SHEAR STRENGTH TESTING RESULTS
   3.1.7.2 – KIDD 4.5 CONSOLIDATION TESTING RESULTS
   3.1.7.3 – KIDD 4.5 MOHR-COULOMB ENVELOPES
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings
Age: 4 hours
Normal Stress: No Load

Shear Stress Results:

Shear Stress vs. Horizontal Displacement

Vertical Displacement vs. Time

MINE: Cayeli Bakir
Appendix 3.1.1.1

Paste Solids Composition:

Age:
Normal Stress:

Shear Stress Results:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Vertical Displacement (mm) vs. Time (s)
MINE: Cayeli Bakir
APPENDIX 3.1.1.1

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Non-Spec Tailings
AGE: 4 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

[Graph showing shear stress results with horizontal and vertical displacement over time for different dates and times.]
APPENDIX 3.1.1.1

MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION:
Other: 93.5% Non-Spec Tailings
AGE: 4 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Shear Stress (KPa) vs. Time (s)

Graphs showing the shear stress results for different dates: 18-May-10, 26-May-10, and 22-Sep-10.
**MINE:** Cayeli Bakır

**PASTE SOLIDS**
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings

**AGE:** 4 hours

**NORMAL STRESS:** 250 kPa

**SHEAR STRESS RESULTS:**

![Graph showing shear stress results](image-url)

![Graph showing vertical displacement](image-url)
**MINE:** Cayeli Bakir

**PASTE SOLIDS** 6.5% Binder (100% Turkish Cement)

**COMPOSITION:**
- **Binder:** 6.5% Binder (100% Turkish Cement)
- **Other:** 93.5% Non-Spec Tailings

**AGE:** 4 hours

**NORMAL STRESS:** 400 kPa

**SHEAR STRESS RESULTS:**

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-May-10</td>
<td>282</td>
</tr>
<tr>
<td>04-Jun-10</td>
<td>282</td>
</tr>
<tr>
<td>22-Sep-10</td>
<td>282</td>
</tr>
</tbody>
</table>

![Shear Stress Graph](image)

- **Shear Stress (KPa)**
- **Horizontal Displacement (mm)**
- **26-May-10**
- **04-Jun-10**
- **22-Sep-10**
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings

COMPOSITION:

AGE: 12 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

---

Shear Stress (KPa)

Horizontal Displacement (mm)

---

Time (s)

Vertical Displacement (mm)
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Non-Spec Tailings

AGE: 12 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:
PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings

AGE: 12 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

\[\text{Shear Stress (KPa)}\]
\[\text{Horizontal Displacement (mm)}\]
\[\text{Time (s)}\]

\[\text{Vertical Displacement (mm)}\]
SHEAR STRESS RESULTS:
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings

24 hours
No Load

SHEAR STRESS RESULTS:

[Graphs showing shear stress and displacement over time]

PASTE SOLIDS COMPOSITION:

MINE: APPENDIX 3.1.1.1
Cayeli Bakir
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings
AGE: 24 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

- **Shear Stress (KPa)**
  - Horizontal Displacement (mm)

- **Time (s)**
  - Vertical Displacement (mm)
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Non-Spec Tailings
AGE: 24 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Vertical Displacement (mm) vs. Time (s)

Graphs showing shear stress results for different dates (21-May-10, 28-May-10, 04-Jun-10).
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)

Other: 93.5% Non-Spec Tailings

AGE: 24 hours

NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with horizontal displacement and time (s) as variables.](image-url)
MINE: Cayeli Bakir
APPENDIX 3.1.1.1
PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION:
Other: 93.5% Non-Spec Tailings
AGE: 48 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

Shear Stress (KPa)

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings

AGE: 48 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

- Shear Stress (KPa) vs. Horizontal Displacement (mm)
  - 27-May-10
  - 06-Jun-10

- Vertical Displacement (mm) vs. Time (s)
  - 27-May-10
  - 06-Jun-10
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Non-Spec Tailings
AGE: 48 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

[Graphs showing shear stress results with data points for different dates and times, indicating horizontal and vertical displacement over time.]
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:
**MINE:** Cayeli Bakir

**PASTE SOLIDS COMPOSITION:**
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings

**AGE:** 96 hours

**NORMAL STRESS:** 50 kPa

### SHEAR STRESS RESULTS:

#### SHEAR STRESS RESULTS

![Graph showing shear stress results](image)

#### Horizontal Displacement (mm)

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#### Vertical Displacement (mm)

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</table>

### MINE: APPENDIX 3.1.1.1
APPENDIX 3.1.1.1

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Non-Spec Tailings
AGE: 96 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Graph 1](Image1.png)

![Graph 2](Image2.png)
MINE: Cayeli Bakır
PASTE SOLIDS: Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Non-Spec Tailings
AGE: 96 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Shear Stress Results Graph]

![Vertical Displacement Graph]
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings
AGE: 96 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings
AGE: 168 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

![Shear Stress Graph](attachment: shear_stress_graph.png)

![Vertical Displacement Graph](attachment: vertical_displacement_graph.png)
SHEAR STRESS RESULTS:

- Normal Stress: 50 kPa
- Paste Solids Composition: 6.5% Binder (100% Turkish Cement), 93.5% Non-Spec Tailings
- Age: 168 hours

Shear Stress vs. Horizontal Displacement

Shear Stress (KPa) vs. Time (s)

<table>
<thead>
<tr>
<th>Date</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-Jun-10</td>
<td>0.2</td>
</tr>
<tr>
<td>15-Jun-10</td>
<td>0.4</td>
</tr>
<tr>
<td>18-Nov-10</td>
<td>0.8</td>
</tr>
</tbody>
</table>
MINE: Cayeli Bakır

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings

AGE: 168 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

[Graphs showing shear stress results over time and displacement.]
SHEAR STRESS RESULTS:

**Shear Stress (KPa)**

- 03-Jun-10
- 15-Jun-10
- 18-Nov-10

**Horizontal Displacement (mm)**

-300 -200 -100 0 100 200 300

**Time (s)**

- 0 500 1000 1500 2000 2500 3000

**Vertical Displacement (mm)**

-2.5 -2 -1.5 -1 -0.5 0
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION:
Other: 93.5% Non-Spec Tailings
AGE:

168 hours
NORMAL STRESS:

400 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa)

Horizontal Displacement (mm)

03-Jun-10
15-Jun-10
18-Nov-10

0 500 1000 1500 2000 2500 3000 3500
Time (s)

0 0.5 1 1.5 2 2.5 3 3.5 4
Vertical Displacement (mm)
CONSOLIDATION RESULTS:

### Binder Composition
- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Tailings

### Age
- 4 hours

### Normal Stress
- 50 kPa

### Paste Composition

### Consolidation Results

#### Graphs
- **Graph 1:** Void Ratio (normalized to 1) vs. Stress (kPa)
  - Data points for different dates:
    - 18-May-10
    - 20-May-10
    - 26-May-10
    - 22-Sep-10 A
    - 22-Sep-10 B

- **Graph 2:** Vertical Displacement (mm) vs. Time (s)
  - Data points for different dates:
    - 18-May-10
    - 20-May-10
    - 26-May-10
    - 22-Sep-10 A
    - 22-Sep-10 B
MINE: Cayeli Bakir
PASTE Binder: 6.5% (100% Turkish Cement)
COMPOSITION: Other: 93.5% Tailings
AGE: 4 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

![Graph showing consolidation results](image)

- **MINE:** Cayeli Bakir
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Tailings
- **AGE:** 4 hours
- **NORMAL STRESS:** 250 kPa
Cayeli Bakır

Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Tailings
AGE: 4 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

[Graph showing void ratio and vertical displacement over time and stress levels for different dates: 26-May-10, 04-Jun-10, 22-Sep-10]
MINE: Cayeli Bakir
PASTE COMPOSITION: Binder: 6.5% (100% Turkish Cement), Other: 93.5% Non-Spec Tailings
AGE: 12 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

**CONSOLIDATION RESULTS:**

- **NORMAL STRESS:** 50 kPa
- **STRESS (kPa):**
  - 1
  - 10
  - 100
- **VOID RATIO (normalized to 1):**
  - 0.80
  - 0.85
  - 0.90
  - 0.95
- **STRESS (kPa):**
  - 200
  - 400
  - 600
  - 800
  - 1000
- **TIME (s):**
  - 0
  - 100
  - 200
  - 300
  - 400
  - 500
  - 600
  - 700
  - 800
  - 900
  - 1000
- **VERTICAL DISPLACEMENT (mm):**
  - -2.5
  - -2
  - -1.5
  - -1
  - 0
  - 0.5

**Graphs:**

1. **Void Ratio vs. Stress**
   - 23-Sep-10 A
   - 23-Sep-10 B

2. **Vertical Displacement vs. Time**
   - 23-Sep-10 A
   - 23-Sep-10 B
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakir
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Non-Spec Tailings
- **AGE:** 12 hours
- **NORMAL STRESS:** 100 kPa

### Graph 1:
- **Void Ratio (normalized to 1)** vs. **Stress (kPa)**
- Data points for 23-Sep-10

### Graph 2:
- **Vertical Displacement (mm)** vs. **Time (s)**
- Data points for 23-Sep-10
**CONSOLIDATION RESULTS:**

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Non-Spec Tailings
- **AGE:** 12 hours
- **NORMAL STRESS:** 250 kPa

**Graphs:**
- Void Ratio vs. Stress (kPa) graph showing consolidation results for 23-Sep-10.
- Vertical Displacement vs. Time (s) graph also for 23-Sep-10.
CONSOLIDATION RESULTS:
MINE: Cayeli Bakır
PASTE COMPOSITION: Binder: 6.5% (100% Turkish Cement) Other: 93.5% Tailings
AGE: 24 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

[Graph showing consolidation results with void ratio normalized to 1 against stress (kPa) and vertical displacement against time (s).]
Cayeli Bakir
Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Tailings
Age: 24 hours
Normal Stress: 100 kPa

Consolidation Results:

Graph 1: Void Ratio vs. Stress
Graph 2: Vertical Displacement vs. Time

Mine: Appendix 3.1.1.2
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - **Binder:** 6.5% (100% Turkish Cement)
  - **Other:** 93.5% Tailings
- **NORMAL STRESS:** 250 kPa
- **AGE:** 24 hours

**CONSOLIDATION RESULTS:**

1. **Void Ratio (normalized to 1)** vs. **Stress (kPa)**
   - Date: 21-May-10, 28-May-10, 04-Jun-10
   - Data points show a decrease in void ratio with increasing stress.

2. **Vertical Displacement (mm)** vs. **Time (s)**
   - Date: 21-May-10, 28-May-10, 04-Jun-10
   - Graphs show a decrease in vertical displacement over time.
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakır

**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Tailings

**AGE:** 24 hours

**NORMAL STRESS:** 400 kPa

- **Void Ratio (normalized to 1)**
  - Stress (kPa): 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1
  - Void Ratio: 1, 0.95, 0.9, 0.85, 0.8, 0.75, 0.7, 0.65, 0.6, 0.55, 0.5

- **Vertical Displacement (mm)**
  - Time (s): 21-May-10, 26-May-10, 04-Jun-10, 06-Jun-10
  - Displacement: 318 mm
Cayeli Bakır

Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Tailings
AGE: 48 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

- Void Ratio (normalized to 1) vs Stress (kPa)
- Vertical Displacement (mm) vs Time (s)

Graphs showing the consolidation results with time and stress for different dates (27-May-10, 06-Jun-10, 08-Jun-10, 19-Oct-10).
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakir

**PASTE COMPOSITION:**
- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Tailings
- **AGE:** 48 hours
- **NORMAL STRESS:** 100 kPa

27-May-10

06-Jun-10
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakir

**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings

**AGE:** 48 hours

**NORMAL STRESS:** 250 kPa

**CONSOLIDATION RESULTS:**

![Graph showing consolidation results over time and stress](image-url)
CONSOLIDATION RESULTS:

MINE: Cayeli Bakir
PASTE COMPOSITION:
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings
AGE: 48 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

<table>
<thead>
<tr>
<th>Stress (kPa)</th>
<th>Void Ratio (normalized to 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>0.95</td>
</tr>
<tr>
<td>100</td>
<td>0.9</td>
</tr>
<tr>
<td>1000</td>
<td>0.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-May-10</td>
<td>0.5</td>
</tr>
<tr>
<td>06-Jun-10</td>
<td>0</td>
</tr>
<tr>
<td>08-Jun-10</td>
<td>-0.5</td>
</tr>
<tr>
<td>19-Oct-10</td>
<td>-1</td>
</tr>
</tbody>
</table>
CONSOLIDATION RESULTS:

---

### Paste Composition

- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Non-Spec Tailings

**Age:** 168 hours

**Normal Stress:** 50 kPa

---

### Consolidation Results

#### Void Ratio (normalized to 1)

- **Stress (kPa):**
  - 40323: 0.96, 0.97, 0.98, 0.99
  - 40330: 0.99
  - 07-Jun-10: 0.97
  - 28-Oct-10: 0.98
  - 01-Nov-10: 0.96

#### Vertical Displacement (mm)

- **Time (s):**
  - 25-May-10: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7
  - 01-Jun-10: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7
  - 07-Jun-10: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7
  - 28-Oct-10: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7
  - 01-Nov-10: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

- Paste Composition:
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Non-Spec Tailings

- Age: 96 hours

- Normal Stress: 250 kPa

- MINE: Cayeli Bakir
CONSOLIDATION RESULTS:

- PASTE COMPOSITION:
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Tailings
- AGE: 96 hours
- NORMAL STRESS: 400 kPa

![Graph showing consolidation results](image-url)
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakır

**PASTE COMPOSITION:**
- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Tailings

**AGE:** 168 hours

**NORMAL STRESS:** 50 kPa

![Graph 1: Void Ratio vs. Stress](image)

![Graph 2: Vertical Displacement vs. Time](image)
MINE: Cayeli Baki
PASTE Binder: 6.5% (100% Turkish Cement)
COMPOSITION: Other: 93.5% Tailings
AGE: 168 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

![Consolidation Graph](image-url)

- **Void Ratio (normalized to 1)** vs. **Stress (kPa)**
- **03-Jun-10** vs. **18-Nov-10**

- **Vertical Displacement (mm)** vs. **Time (s)**
CONSOLIDATION RESULTS:

**NORMAL STRESS:** 250 kPa

**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Tailings

**AGE:** 168 hours

**CONSERVATION RESULTS:**

- **Void Ratio (normalized to 1)**
  - Stress (kPa)
  - Time (s)

- **Vertical Displacement (mm)**
  - 03-Jun-10
  - 15-Jun-10
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Tailings
- **AGE:** 168 hours
- **NORMAL STRESS:** 400 kPa

### Void Ratio (normalized to 1) vs. Stress (kPa)

- **03-Jun-10**
- **15-Jun-10**
- **18-Nov-10**

### Vertical Displacement (mm) vs. Time (s)

- **03-Jun-10**
- **15-Jun-10**
- **18-Nov-10**
PASTE SOLIDS COMPOSITION:
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings

AGE: 4 hours

**APPENDIX 3.1.3**

**MINE:** Cayeli Bakır

**Test Results**

- Peak: $y = 0.73x + 5.02$, $R^2 = 1.00$
- Residual: $y = 0.73x + 4.82$, $R^2 = 1.00$
PASTE SOLIDS COMPOSITION:

- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings

AGE: 12 hours

**Wheel Loading Test Results**

- **Peak**
  - Equation: \( y = 0.75x + 9.04 \)
  - \( R^2 = 0.99 \)

- **Residual**
  - Equation: \( y = 0.75x + 6.87 \)
  - \( R^2 = 1.00 \)

Test Results vs. 95% Conf. Int. vs. 95% Pred. Int.
PASTE SOLIDS COMPOSITION:
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Non-Spec Tailings

AGE: 24 hours

Test Results
- Peak: $y = 0.81x + 5.77$, $R^2 = 1.00$
- Residual: $y = 0.81x + 5.77$, $R^2 = 1.00$
APPENDIX 3.1.1.3

PASTE SOLIDS COMPOSITION:

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings

AGE: 48 hours

MINE: APPENDIX 3.1.1.

\[ y = 0.73x + 21.16 \]
\[ R^2 = 1.00 \]

Peak

\[ y = 0.73x + 12.08 \]
\[ R^2 = 1.00 \]

Residual
**PASTE SOLIDS COMPOSITION:**

- **Binder:** 6.5% Binder (100% Turkish Cement)
- **Other:** 93.5% Non-Spec Tailings

**AGE:** 96 hours

---

**Peak**

\[
y = 0.61x + 77.64 \\
R^2 = 0.98
\]

**Residual**

\[
y = 0.75x + 18.23 \\
R^2 = 1.00
\]
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Non-Spec Tailings
AGE: 168 hours

**APPENDIX 3.1.1.3**

**PASTE SOLIDS COMPOSITION:**

**AGE:**

\[ y = 0.50x + 125.42 \]
\[ R^2 = 0.96 \]

Peak

\[ y = 0.74x + 33.79 \]
\[ R^2 = 0.99 \]

Residual
SHEAR STRESS RESULTS:

**MINE:** Cayeli Bakir

**PASTE SOLIDS COMPOSITION:**
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Spec Tailings

**AGE:** 4 hours

**NORMAL STRESS:** No Load
SHEAR STRESS RESULTS:

**Shear Stress (KPa)** vs **Horizontal Displacement (mm)**

**Time (s)** vs **Vertical Displacement (mm)**
SHEAR STRESS RESULTS:

![Shear Stress Results Graph](image-url)
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 4 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:
MINE: Cayeli Bakır

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

COMPOSITION:

AGE: 4 hours

NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)
**MINE:** Cayeli Bakir

**PASTE SOLIDS**
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Spec Tailings

**COMPOSITION:**

**AGE:** 12 hours

**NORMAL STRESS:** 50 kPa

**SHEAR STRESS RESULTS:**

- Horizontal Displacement (mm)
  - 01-Oct-10 A
  - 01-Oct-10 B

- Shear Stress (KPa)
- Time (s)
- Vertical Displacement (mm)
SHEAR STRESS RESULTS:

![Graph of shear stress vs. horizontal displacement](image1)

![Graph of vertical displacement vs. time](image2)
**MINE:** Cayeli Bakır

**PASTE SOLIDS COMPOSITION:**
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Spec Tailings

**AGE:** 12 hours

**NORMAL STRESS:** 250 kPa

**SHEAR STRESS RESULTS:**

**Shear Stress (KPa)**

**Horizontal Displacement (mm)**

**Time (s)**

**Vertical Displacement (mm)**
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 12 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

**MINE:** APPENDIX 3.1.2.1

**PASTE SOLIDS COMPOSITION:**

**NORMAL STRESS:** 400 kPa

[Graphs showing shear stress and displacement results]
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 24 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

![Graph of shear stress results](image)

**Graph Description:**
- **Shear Stress (KPa)** vs. **Horizontal Displacement (mm)**
- **Graph Title:** MINE: APPENDIX 3.1.2.1
- **Data Points:**
  - 30-Jul-10

**Horizontal Displacement (mm):**
- Values range from -10 to 20

**Shear Stress (KPa):**
- Values range from -4 to 24

**Time (s):**
- Values range from 30-Jul-10 to 346

**Vertical Displacement (mm):**
- Values range from -0.08 to 0.01

**Graph Notes:**
- Vertical Displacement graph shows significant fluctuations over time.
Cayeli Bakır

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

MINE: Cayeli Bakır
PASTE SOLIDS COMPOSITION:
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings
AGE: 24 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

Shear Stress Results Graph:
- Horizontal Displacement (mm)
- Shear Stress (kPa)

Time vs. Vertical Displacement Graph:
- Time (s)
- Vertical Displacement (mm)
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)

Other: 93.5% Spec Tailings

Age: 24 hours

Normal Stress: 100 kPa

Shear Stress Results:

![Shear Stress Graph]

![Horizontal Displacement Graph]

![Vertical Displacement Graph]
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 24 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with time and displacement plots]
SHEAR STRESS RESULTS:

---

**MINE:** Cayeli Bakır  
**APPENDIX 3.1.2.1**

**PASTE SOLIDS COMPOSITION:**  
Binder: 6.5% Binder (100% Turkish Cement)  
Other: 93.5% Spec Tailings  
Age: 24 hours  
Normal Stress: 400 kPa

---

**SHEAR STRESS RESULTS:**

**Paste Solids Composition:**

- Normal Stress: 400 kPa
- Time:
  - 29-Jul-10
  - 30-Jul-10
  - 13-Aug-10
  - 19-Aug-10
  - 02-Oct-10

---

**Shear Stress (KPa) vs. Horizontal Displacement (mm):**

Graph showing shear stress varying with horizontal displacement over time.

---

**Vertical Displacement (mm) vs. Time (s):**

Graph showing vertical displacement over time.
SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Vertical Displacement (mm) vs. Time (s)
APPENDIX 3.1.2.1

MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Spec Tailings

AGE: 48 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

Shear Stress (kPa) vs. Horizontal Displacement (mm)

Shear Stress (kPa) vs. Time (s)
SHEAR STRESS RESULTS:

![Graph showing shear stress results](image)

**Normal Stress:** 100 kPa

**Age:** 48 hours

**Binder:** 6.5% Binder (100% Turkish Cement)

**Other:** 93.5% Spec Tailings

**Mine:** Appendix 3.1.2.1

**Paste Solids Composition:**

- **Shear Stress (KPa)**
- **Horizontal Displacement (mm)**

**Time (s)**

- **Vertical Displacement (mm)**
Cayeli Bakir

Binder: 6.5% (100% pre-mix with slag)

Other: 93.5% Spec Tailings

Age: 48 hrs

Normal Stress: 250 kPa

Shear Stress Results:

SHEAR STRESS RESULTS:

Shear Stress (KPa)

Horizontal Displacement (mm)

Shear Stress (KPa)

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)

Shear Stress Results
MINE: Cayeli Bakır
PASTE Binder: 6.5% (100% pre-mix with slag)
COMPOSITION: Other: 93.5% Spec Tailings
AGE: 48 hrs
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)
SHEAR STRESS RESULTS:

**MINE:** Cayeli Bakir

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 6.5% Binder (100% Turkish Cement)
- **Other:** 93.5% Spec Tailings

**AGE:** 4 hours

**NORMAL STRESS:** No Load
SHEAR STRESS RESULTS:
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 96 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

[Mine: Appendix 3.1.2.1

*Paste Solids Composition:

- **Age:** 96 hours
- **Normal Stress:** 50 kPa

**Shear Stress Results:**

*Graph showing shear stress (KPa) vs. horizontal displacement (mm) for different time points (10-Aug-10, 17-Aug-10, 18-Oct-10).

*Graph showing time (s) vs. vertical displacement (mm) for different time points (10-Aug-10, 17-Aug-10, 18-Oct-10).
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 96 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph](image1)

![Time vs. Vertical Displacement](image2)
**Cayeli Bakir**

**Binder:** 6.5% Binder (100% Turkish Cement)

**Other:** 93.5% Spec Tailings

**Age:** 96 hours

**Normal Stress:** 250 kPa

---

**Shear Stress Results:**

![Shear Stress Graph](image)

- **Horizontal Displacement (mm)**
- **Shear Stress (kPa)**

**Time (s):**

- **Vertical Displacement (mm)**

![Time Graph](image)
Cayeli Bakir

Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 96 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:
Cayeli Bakir
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings
168 hours
50 kPa

SHEAR STRESS RESULTS:

[Graphs showing shear stress and displacement over time]
SHEAR STRESS RESULTS:

![Shear Stress Graph](image)

![Vertical Displacement Graph](image)
APPENDIX 3.1.2.1

MINE: Cayeli Bakir
PASTE SOLIDS: Binder: 6.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 93.5% Spec Tailings
AGE: 168 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with horizontal and vertical displacement measurements over time.]

- Horizontal Displacement (mm)
- Vertical Displacement (mm)
- Time (s)
- Shear Stress (kPa)
<table>
<thead>
<tr>
<th>MINE:</th>
<th>Cayeli Bakir</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASTE SOLIDS</td>
<td>Binder: 6.5% Binder (100% Turkish Cement)</td>
</tr>
<tr>
<td>COMPOSITION:</td>
<td>Other: 93.5% Spec Tailings</td>
</tr>
<tr>
<td>AGE:</td>
<td>168 hours</td>
</tr>
<tr>
<td>NORMAL STRESS:</td>
<td>400 kPa</td>
</tr>
</tbody>
</table>

SHEAR STRESS RESULTS:

![Graph showing shear stress results](image)

**NORMAL STRESS:** 400 kPa

**SHEAR STRESS RESULTS:**

- Horizontal Displacement (mm)
- Vertical Displacement (mm)
- Time (s)

![Graph showing shear stress results](image)
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Spec Tailings
- **AGE:** 4 hours
- **NORMAL STRESS:** 50 kPa

### Graph 1: Void Ratio vs. Stress
- **X-axis:** Stress (kPa)
- **Y-axis:** Void Ratio (normalized to 1)
- **Data Points:**
  - 28-Jul-10
  - 04-Aug-10
  - 10-Aug-10
  - 14-Sep-10

### Graph 2: Vertical Displacement vs. Time
- **X-axis:** Time (s)
- **Y-axis:** Vertical Displacement (mm)
- **Data Points:**
  - 28-Jul-10
  - 04-Aug-10
  - 10-Aug-10
  - 14-Sep-10
Cayeli Bakir

Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Spec Tailings
Age: 4 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

[Graph showing void ratio vs. stress and vertical displacement vs. time for different dates: 04-Aug-10, 10-Aug-10, 14-Sep-10 A, 14-Sep-10 B]
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakır

**PASTE COMPOSITION:**
- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Spec Tailings

**AGE:** 4 hours

**NORMAL STRESS:** 250 kPa

<table>
<thead>
<tr>
<th>Date</th>
<th>Void Ratio</th>
<th>Vertical Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>28-Jul-10</td>
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<td>04-Aug-10</td>
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<td>10-Aug-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-Sep-10 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-Sep-10 B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graphs:**
- Void Ratio vs. Stress
- Vertical Displacement vs. Time
MINE: Cayeli Bakir
PASTE:
  Binder: 6.5% (100% Turkish Cement)
  Other: 93.5% Spec Tailings
AGE: 4 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

![Consolidation Results](image-url)
**CONSOLIDATION RESULTS:**

1. **MINE:** Cayeli Bakır
2. **PASTE COMPOSITION:**
   - **Binder:** 6.5% (100% Turkish Cement)
   - **Other:** 93.5% Spec Tailings
3. **AGE:** 12 hours
4. **NORMAL STRESS:** 50 kPa

---

**CONSOLIDATION RESULTS**:

- **Graph 1:**
  - **X-axis:** Stress (kPa)
  - **Y-axis:** Void Ratio (normalized to 1)
  - Legend:
    - 01-Oct-10 A
    - 01-Oct-10 B

- **Graph 2:**
  - **X-axis:** Time (s)
  - **Y-axis:** Vertical Displacement (mm)
  - Legend:
    - 01-Oct-10 A
    - 01-Oct-10 B
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Spec Tailings
- **AGE:** 12 hours
- **NORMAL STRESS:** 100 kPa
**MINE:** Cayeli Bakır

**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Spec Tailings

**AGE:** 12 hours

**NORMAL STRESS:** 250 kPa

**CONSOLIDATION RESULTS:**

![Consolidation Graph]

**Void Ratio (normalized to 1) vs. Stress (kPa):**

- Void Ratio decreases with increasing stress.

**Vertical Displacement (mm) vs. Time (s):**

- Displacement decreases over time, showing consolidation behavior.

---

*APPENDIX 3.1.2.2*
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

- **Mine**: Cayeli Bakır
- **Paste Composition**: Binder: 6.5% (100% Turkish Cement), Other: 93.5% Spec Tailings
- **Age**: 24 hours
- **Normal Stress**: 50 kPa

### Consolidation Results Diagrams

1. **Void Ratio (normalized to 1) vs. Stress (kPa)**

2. **Vertical Displacement (mm) vs. Time (s)**
Cayeli Baki

Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Spec Tailings

CONSolidation Results:

**MINE:** APPENDIX 3.1.2.

**PASTE COMPOSITION:**

**AGE:** 24 hours

**NORMAL STRESS:** 100 kPa

**CONSOLIDATION RESULTS:**

![Consolidation Graph]

![Vertical Displacement Graph]
MINE: Cayeli Baki

PASTE COMPOSITION:
Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 24 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

[Graph showing consolidation results with data points for different dates and stress levels.]
CONSOLIDATION RESULTS:

[Graph showing consolidation results with lines indicating void ratio (normalized to 1) vs. stress (kPa) and vertical displacement (mm) vs. time (s).]

- **Binder**: 6.5% (100% Turkish Cement)
- **Other**: 93.5% Spec Tailings
- **Age**: 24 hours
- **Normal Stress**: 400 kPa

**MINE**: Cayeli Bakı

**PASTE COMPOSITION**: Binder: 6.5% (100% Turkish Cement)  
Other: 93.5% Spec Tailings

**CONSOLIDATION RESULTS**: (Graphs showing consolidation results with lines indicating void ratio (normalized to 1) vs. stress (kPa) and vertical displacement (mm) vs. time (s).)
CONSOLIDATION RESULTS:

\[ \text{void ratio} = \frac{1}{\text{stress}} \]

\[ \text{vertical displacement} = \text{time} \]

**MINE:** Cayeli Bakır
**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Spec Tailings
**AGE:** 48 hours
**NORMAL STRESS:** 50 kPa

**CONSOLIDATION RESULTS:**
**CONSOLIDATION RESULTS:**

**MINE:** Cayeli Bakır
**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Spec Tailings
**AGE:** 48 hours
**NORMAL STRESS:** 100 kPa

---

**Graph 1:**
- **29-Jul-10**
- **Vertical Displacement (mm)**
- **Time (s)**

**Graph 2:**
- **05-Aug-10**
- **Void Ratio (normalized to 1)**
- **Stress (kPa)**
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Spec Tailings
- **AGE:** 48 hours
- **NORMAL STRESS:** 250 kPa

**CONSOLIDATION RESULTS CHARTS:**

1. **Void Ratio Chart:**
   - X-axis: Stress (kPa)
   - Y-axis: Void Ratio (normalized to 1)
   - Graphs for 05-Aug-10, 06-Aug-10, and 12-Aug-10

2. **Vertical Displacement Chart:**
   - X-axis: Time (s)
   - Y-axis: Vertical Displacement (mm)
   - Graphs for 05-Aug-10, 06-Aug-10, and 12-Aug-10
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakır

**PASTE COMPOSITION:**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Spec Tailings

**AGE:** 48 hours

**NORMAL STRESS:** 400 kPa

---

**CONSOLIDATION RESULTS:**

**PASTE COMPOSITION:**

**AGE:**
- 0.6
- 0.7
- 0.8
- 0.9
- 1

**NORMAL STRESS:**
- 0.5
- 200
- 400
- 600
- 800
- 1000
- 1200
- 1400
- 1600
- 1800

**VOID RATIO (NORMALIZED TO 1):**

**STRESS (kPa):**

**VERTICAL DISPLACEMENT (mm):**

**TIME (s):**

---

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CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakir

**PASTE COMPOSITION:**

- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Spec Tailings

**AGE:** 96 hours

**NORMAL STRESS:** 50 kPa

---

**CONSOLIDATION RESULTS:**

- **PASTE COMPOSITION:**
  - **AGE:**
    - 10-Aug-10
    - 17-Aug-10
    - 18-Oct-10
  - **NORMAL STRESS:** 50 kPa
CONsolidation results:
Cayeli Bakir

Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Spec Tailings

96 hours

250 kPa

CONSOLIDATION RESULTS:

Graphs showing the consolidation results with void ratio normalized to 1 and vertical displacement over time.
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakir

**PASTE**
- Binder: 6.5% (100% Turkish Cement)
- Other: 93.5% Spec Tailings

**AGE:** 168 hours

**NORMAL STRESS:** 50 kPa

**COMPOSITION:**

**CONSOLIDATION RESULTS:**
CONSOLIDATION RESULTS:

- **Mine**: Appendix 3.1.2.
- **Paste Composition**: 
  - Binder: 6.5% (100% Turkish Cement)
  - Other: 93.5% Spec Tailings
- **Age**: 168 hours
- **Normal Stress**: 100 kPa

---

**Graph 1**: Void ratio (normalized to 1) vs. stress (kPa) for 20-Aug-10.

**Graph 2**: Vertical displacement (mm) vs. time (s) for 20-Aug-10.
MINE: Cayeli Bakir
PASTE COMPOSITION:
Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Spec Tailings
AGE: 168 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakir
**PASTE**
- **Binder:** 6.5% (100% Turkish Cement)
- **Other:** 93.5% Spec Tailings
**AGE:** 168 hours
**NORMAL STRESS:** 400 kPa

**CONSOLIDATION RESULTS:**

---

**Void Ratio (normalized to 1)**

- Time (s)
  - 20-Aug-10

---

**Vertical Displacement (mm)**

- Stress (kPa)
  - 20-Aug-10
PASTE SOLIDS COMPOSITION:
- Binder: 6.5% Binder (100% Turkish Cement)
- Other: 93.5% Spec Tailings

AGE: 4 hours

APPENDIX 3.1.2.

MINE: Cayeli Bakır

**Peak**

\[ y = 0.832x + 3.7 \]
\[ R^2 = 0.9593 \]

**Residual**

\[ y = 0.7494x + 9.5411 \]
\[ R^2 = 0.9948 \]
PASTE SOLIDS COMPOSITION:

- **Binder:** 6.5% Binder (100% Turkish Cement)
- **Other:** 93.5% Spec Tailings

**AGE:** 12 hours

**MINE:** APPENDIX 3.1.2.3

---

**Graph 1:**
- Equation: \( y = 0.7595x + 15.091 \)
- \( R^2 = 0.9957 \)

**Graph 2:**
- Equation: \( y = 0.7711x + 11.317 \)
- \( R^2 = 0.9951 \)

---

**Peak**

- Test Results
- 95% Conf. Int.
- 95% Pred. Int.

**Residual**

- Test Results
- 95% Conf. Int.
- 95% Pred. Int.
PASTE SOLIDS COMPOSITION:
Binder: 6.5% Binder (100% Turkish Cement)
Other: 93.5% Spec Tailings

AGE: 24 hours

\[ y = 0.8533x + 7.1431 \]
\[ R^2 = 0.9976 \]

\[ y = 0.7579x + 9.051 \]
\[ R^2 = 0.9979 \]
**PASTE SOLIDS COMPOSITION:**

- **Binder:** 6.5% Binder (100% Turkish Cement)
- **Other:** 93.5% Spec Tailings

**Age:** 48 hours

---

**Graphs:**

1. **Peak**
   - Equation: $y = 0.7524x + 19.846$
   - $R^2 = 0.9994$

2. **Residual**
   - Equation: $y = 0.7333x + 16.667$
   - $R^2 = 0.9998$
**Paste Solids Composition:**

| Binder: 6.5% Binder (100% Turkish Cement) |
| Other: 93.5% Spec Tailings |

**Age:** 96 hours

**Graphs:**

1. **Peak:**
   - Equation: \( y = 0.7768x + 22.924 \)
   - \( R^2 = 0.9985 \)

2. **Residual:**
   - Equation: \( y = 0.7067x + 19.229 \)
   - \( R^2 = 0.9981 \)
PASTE SOLIDS: Binder: 6.5% Binder (100% Turkish Cement)  
Other: 93.5% Spec Tailings  
AGE: 168 hours

\[ y = 0.7033x + 41.833 \]
\[ R^2 = 0.994 \]

\[ y = 0.65x + 40 \]
\[ R^2 = 0.9949 \]
Cayeli Bakır

Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

Age: 4 hours
Normal Stress: 50 kPa

Shear Stress Results:

![Graph showing shear stress results with horizontal and vertical displacement over time.](image-url)
**APPENDIX 3.1.3.1**

<table>
<thead>
<tr>
<th>MINE: Cayeli Bakir</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PASTE SOLIDS</strong></td>
</tr>
<tr>
<td>Binder: 8.5% Binder (100% Turkish Cement)</td>
</tr>
<tr>
<td><strong>COMPOSITION:</strong></td>
</tr>
<tr>
<td>Other: 91.5% Spec Tailings</td>
</tr>
<tr>
<td><strong>AGE:</strong> 4 hours</td>
</tr>
<tr>
<td><strong>NORMAL STRESS:</strong> 100 kPa</td>
</tr>
</tbody>
</table>

**SHEAR STRESS RESULTS:**

![Graph](image-url)

![Graph](image-url)
Cayeli Bakir

Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 4 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

[Graph showing shear stress results with labels for different dates and conditions]

[Graph showing vertical displacement with time]
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 4 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)
Cayeli Bakir

Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 12 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
Cayeli Bakır

Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 12 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results](image-url)

![Graph showing time-displacement results](image-url)
APPENDIX 3.1.3.1

MINE: Cayeli Bakir

PASTE SOLIDS COMPOSITION:
- Binder: 8.5% Binder (100% Turkish Cement)
- Other: 91.5% Spec Tailings

AGE: 12 hours

NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

- Shear Stress (KPa)
- Horizontal Displacement (mm)

- Time (s)
- Vertical Displacement (mm)
**MINE:** Cayeli Bakır

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 8.5% Binder (100% Turkish Cement)
- **Other:** 91.5% Spec Tailings

**AGE:** 12 hours

**NORMAL STRESS:** 400 kPa

**SHEAR STRESS RESULTS:**

<table>
<thead>
<tr>
<th>Shear Stress (KPa)</th>
<th>Horizontal Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8</td>
<td>29-Sep-10</td>
</tr>
<tr>
<td>-6</td>
<td>03-Oct-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29-Sep-10</td>
<td>0</td>
</tr>
<tr>
<td>03-Oct-10</td>
<td>0</td>
</tr>
</tbody>
</table>
Cayeli Bakir

Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 24 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
MINE: Cayeli Bakir

PASTE SOLIDS
Binder: 8.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 91.5% Spec Tailings
AGE: 24 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph]

![Time vs. Vertical Displacement Graph]
Cayeli Bakir

Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings
AGE: 24 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with horizontal and vertical displacements over time.](image-url)
MINE: Cayeli Bakır

PASTE SOLIDS COMPOSITION:
- Binder: 8.5% Binder (100% Turkish Cement)
- Other: 91.5% Spec Tailings

AGE: 24 hours

NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time and displacement](image-url)
MINE: Cayeli Bakır
PASTE SOLIDS COMPOSITION: Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings
AGE: 48 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time with data points for different dates and a legend indicating different samples: 26-Aug-10 A, 26-Aug-10 B, 27-Aug-10, 29-Aug-10, and 05-Oct-10. The graphs show horizontal and vertical displacement over time.](image-url)
Cayeli Bakir
Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings
AGE: 48 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph]

![Horizontal Displacement Graph]

![Vertical Displacement Graph]
MINE: Cayeli Bakır

PASTE SOLIDS
Binder: 8.5% Binder (100% Turkish Cement)

COMPOSITION:
Other: 91.5% Spec Tailings

AGE: 48 hours

NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with different dates and displacement measurements.](image-url)
APPENDIX 3.1.3.1

MINE: Cayeli Bakır

PASTE SOLIDS
Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 48 hours

NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with various data points and labels for different dates and times.]

---

[Graph showing time vs. vertical displacement with various data points and labels for different dates and times.]

---

26-Aug-10
27-Aug-10
29-Aug-10 A
29-Aug-10 B
05-Oct-10
APPENDIX 3.1.3.1

MINE: Cayeli Bakır

PASTE SOLIDS
Binder: 8.5% Binder (100% Turkish Cement)
COMPOSITION: Other: 91.5% Spec Tailings
AGE: 96 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

[Graph showing shear stress results with data for different dates and shear stress values against horizontal displacement and time.]

[Graph showing vertical displacement against time for different dates and displacement values.]
**MINE:** Cayeli Bakır

**APPENDIX 3.1.3.1**

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 8.5% Binder (100% Turkish Cement)
- **Other:** 91.5% Spec Tailings

**AGE:** 96 hours

**NORMAL STRESS:** 100 kPa

**SHEAR STRESS RESULTS:**

### Normal Stress

#### Horizontal Displacement (mm)

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>500</td>
<td>0</td>
</tr>
<tr>
<td>1000</td>
<td>0</td>
</tr>
<tr>
<td>1500</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>0</td>
</tr>
<tr>
<td>2500</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Vertical Displacement (mm)

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>-0.7</td>
</tr>
<tr>
<td>200</td>
<td>-0.6</td>
</tr>
<tr>
<td>300</td>
<td>-0.5</td>
</tr>
<tr>
<td>400</td>
<td>-0.4</td>
</tr>
<tr>
<td>500</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

#### Shear Stress (KPa)

![Graph showing shear stress results](image-url)
MINE: Cayeli Bakir

PASTE SOLIDS COMPOSITION:
Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 96 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

Shear Stress Results Diagram

Horizontal Displacement (mm)

02-Sep-10
28-Sep-10

Vertical Displacement (mm)

02-Sep-10
28-Sep-10

Time (s)
MINE: Cayeli Bakır
PASTE SOLIDS COMPOSITION: Binder: 8.5% Binder (100% Turkish Cement) Other: 91.5% Spec Tailings
AGE: 96 hours NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

[Graph showing shear stress results with time and displacement plots for 02-Sep-10 and 28-Sep-10]
MINE: Cayeli Bakır
PASTE COMPOSITION: Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Tailings
AGE: 4 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:
MINE: Cayeli Bakır
PASTE COMPOSITION:
Binder: 6.5% (100% Turkish Cement)
Other: 93.5% Tailings
AGE: 4 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

![Consolidation Results Diagram](image-url)
MINE: Cayeli Bakir
PASTE Binder: 6.5% (100% Turkish Cement)
COMPOSITION: Other: 93.5% Tailings
AGE: 4 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:
MINE: Cayeli Bakir
PASTE Binder: 6.5% (100% Turkish Cement)
COMPOSITION: Other: 93.5% Tailings
AGE: 4 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

![Consolidation Results Graph](image-url)
MINE: Cayeli Bakir
PASTE COMPOSITION:
Binder: 8.5% (100% Turkish Cement)
Other: 91.5% Tailings
AGE: 12 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

![Graph 1: Void Ratio vs. Stress](image1)

- Void Ratio (normalized to 1)
- Stress (kPa)
- 29-Sep-10 A
- 29-Sep-10 B
- 03-Oct-10

![Graph 2: Vertical Displacement vs. Time](image2)

- Vertical Displacement (mm)
- Time (s)
- 29-Sep-10
- 29-Sep-10 B
- 03-Oct-10
CONSOLIDATION RESULTS:

MINE: Cayeli Bakır

PASTE COMPOSITION:
- Binder: 8.5% (100% Turkish Cement)
- Other: 91.5% Tailings

AGE: 12 hours

NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 8.5% (100% Turkish Cement)
  - Other: 91.5% Tailings
- **AGE:** 12 hours
- **NORMAL STRESS:** 250 kPa

![Graph showing consolidation results](image-url)
CONSOLIDATION RESULTS:

- **MINE:** Cayeli Bakır
- **PASTE COMPOSITION:**
  - Binder: 8.5% (100% Turkish Cement)
  - Other: 91.5% Tailings
- **AGE:** 12 hours
- **NORMAL STRESS:** 400 kPa

---

**CONCEPTS:**

- **Void Ratio (normalized to 1)**
- **Stress (kPa)**
- **Vertical Displacement (mm)**
- **Time (s)**

**Graphs:**

1. **Graph 1:**
   - **Y-axis:** Void Ratio (normalized to 1)
   - **X-axis:** Stress (kPa)
   - Data points for 29-Sep-10 and 03-Oct-10.

2. **Graph 2:**
   - **Y-axis:** Vertical Displacement (mm)
   - **X-axis:** Time (s)
   - Data points for 29-Sep-10 and 03-Oct-10.
MINE: Cayeli Bakır
PASTE COMPOSITION: Binder: 8.5% (100% Turkish Cement)
Other: 91.5% Tailings
AGE: 24 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

[Graph showing void ratio and vertical displacement over time]
MINE: Cayeli Bakir
PASTE COMPOSITION:
Binder: 8.5% (100% Turkish Cement)
Other: 91.5% Tailings
AGE: 24 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

- Void Ratio (normalized to 1)
- Stress (kPa)
- Vertical Displacement (mm)

Graphs showing the consolidation results with time and stress.
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakır

**PASTE**
- Binder: 8.5% (100% Turkish Cement)
- Other: 91.5% Tailings

**AGE:** 24 hours

**NORMAL STRESS:** 250 kPa

---

**CONSOLIDATION RESULTS:**

[Graphs showing void ratio and vertical displacement over time and stress levels.]
CONSOLIDATION RESULTS:

MINE: Cayeli Bakır
PASTE COMPOSITION: Binder: 8.5% (100% Turkish Cement), Other: 91.5% Tailings
AGE: 24 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

- Graph showing void ratio (normalized to 1) vs. stress (kPa) over time (s)
- Graph showing vertical displacement (mm) over time (s) for different dates and samples.
MINE: Cayeli Bakır
PASTE COMPOSITION: Binder: 8.5% (100% Turkish Cement)
Other: 91.5% Tailings
AGE: 48 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:

[Graph showing void ratio (normalized to 1) vs. stress (kPa) over time (s)]

[Graph showing vertical displacement (mm) over time (s) for different dates]
MINE: Cayeli Bakır
PASTE COMPOSITION:
Binder: 8.5% (100% Turkish Cement)
Other: 91.5% Tailings
AGE: 48 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

---

**CONSOLIDATION RESULTS:**

---

![Consolidation Results](image-url)
Cayeli Bakır

**Binder:** 8.5% (100% Turkish Cement)

**Other:** 91.5% Tailings

**Age:** 48 hours

**Normal Stress:** 250 kPa

**Consolidation Results:**

---

**Paste Composition:**

**Age:**

**Normal Stress:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Void Ratio (normalized to 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-Aug-10</td>
<td>0.98</td>
</tr>
<tr>
<td>27-Aug-10</td>
<td>0.96</td>
</tr>
<tr>
<td>29-Aug-10</td>
<td>0.94</td>
</tr>
<tr>
<td>05-Oct-10 A</td>
<td>0.92</td>
</tr>
<tr>
<td>05-Oct-10 B</td>
<td>0.90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-Aug-10</td>
<td>-3</td>
</tr>
<tr>
<td>27-Aug-10</td>
<td>-2</td>
</tr>
<tr>
<td>29-Aug-10</td>
<td>-1</td>
</tr>
<tr>
<td>05-Oct-10 A</td>
<td>0</td>
</tr>
<tr>
<td>05-Oct-10 B</td>
<td>0</td>
</tr>
</tbody>
</table>
CONSOLIDATION RESULTS:

**PASTE COMPOSITION:**
- Binder: 8.5% (100% Turkish Cement)
- Other: 91.5% Tailings

**AGE:**
- 48 hours

**NORMAL STRESS:**
- 400 kPa
CONSOLIDATION RESULTS:

- Paste Composition:
  - Binder: 8.5% (100% Turkish Cement)
  - Other: 91.5% Tailings

- Age: 96 hours

- Normal Stress: 50 kPa

---

**CONSOLIDATION RESULTS:**

### Graph 1:
- **Y-axis:** Void Ratio (normalized to 1)
- **X-axis:** Stress (kPa)
- Data points for different dates:
  - 26-Aug-10 A
  - 26-Aug-10 B
  - 28-Sep-10 A
  - 28-Sep-10 B

### Graph 2:
- **Y-axis:** Vertical Displacement (mm)
- **X-axis:** Time (s)
- Data points for different dates:
  - 26-Aug-10 A
  - 26-Aug-10 B
  - 28-Sep-10 A
  - 28-Sep-10 B
CONSOLIDATION RESULTS:

- MINE: Cayeli Bakır
- PASTE COMPOSITION:
  - Binder: 8.5% (100% Turkish Cement)
  - Other: 91.5% Tailings
- AGE: 96 hours
- NORMAL STRESS: 100 kPa

Consolidation tests were conducted under varying normal stresses and ages. The results show the consolidation behavior of the paste over time, indicating the reduction in void ratio and vertical displacement with increasing stress levels.

The graphs display the relationship between stress and void ratio, as well as the time vs. vertical displacement, highlighting the consolidation process.

Graphs for consolidation results show the normalized void ratio over stress levels and the vertical displacement over time.
MINE: Cayeli Bakir
PASTE COMPOSITION: Binder: 8.5% (100% Turkish Cement), Other: 91.5% Tailings
AGE: 96 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

[Graph of void ratio versus stress (kPa) with normalized values to 1 for two dates: 26-Aug-10 and 28-Sep-10]

[Graph of vertical displacement (mm) versus time (s) with two lines for 26-Aug-10 and 28-Sep-10]
CONSOLIDATION RESULTS:

**MINE:** Cayeli Bakır

**PASTE COMPOSITION:**
- Binder: 8.5% (100% Turkish Cement)
- Other: 91.5% Tailings

**AGE:** 96 hours

**NORMAL STRESS:** 400 kPa

---

**CONSOLIDATION RESULTS:**

### Paste Composition

<table>
<thead>
<tr>
<th>Void Ratio (normalized to 1)</th>
<th>26-Aug-10</th>
<th>28-Sep-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Displacement (mm)</td>
<td>0</td>
<td>-2</td>
</tr>
</tbody>
</table>

---

### Stress vs. Time

- **Stress (kPa):** 1, 10, 100, 1000
- **Time (s):** 0, 100, 200, 300, 400, 500, 600, 700, 800, 900
PASTE SOLIDS COMPOSITION:
Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 4 hours

\[ y = 0.6864x + 10.051 \]
\[ R^2 = 0.995 \]
PASTE SOLIDS COMPOSITION:
- Binder: 8.5% Binder (100% Turkish Cement)
- Other: 91.5% Spec Tailings

AGE: 12 hours

**Peak**

\[ y = 0.7239x + 24.115 \]
\[ R^2 = 0.9934 \]

**Residual**

\[ y = 0.7157x + 21.258 \]
\[ R^2 = 0.9955 \]
PASTE SOLIDS COMPOSITION:
Binder: 8.5% Binder (100% Turkish Cement)
Other: 91.5% Spec Tailings

AGE: 24 hours

MINE: APPENDIX 3.1.3.

\[
y = 0.7183x + 27.28 \\
R^2 = 0.9912
\]

\[
y = 0.7199x + 21.636 \\
R^2 = 0.9917
\]
PASTE SOLIDS COMPOSITION:
- Binder: 8.5% Binder (100% Turkish Cement)
- Other: 91.5% Spec Tailings

AGE: 48 hours

### Peak

\[ y = 0.6924x + 40.935 \]
\[ R^2 = 0.9233 \]

### Residual

\[ y = 0.6461x + 36.125 \]
\[ R^2 = 0.9515 \]
PASTE SOLIDS COMPOSITION:
- Binder: 8.5% Binder (100% Turkish Cement)
- Other: 91.5% Spec Tailings

AGE: 96 hours

** equations and graphs:**

1. \(y = 0.4784x + 106.84\)  
   \(R^2 = 0.9871\)

2. \(y = 0.5933x + 47.409\)  
   \(R^2 = 0.964\)
SHEAR STRESS RESULTS:

![Graph showing shear stress results.](image-url)

**Shear Stress (KPa)**

- Horizontal Displacement (mm)

**Time (s)**

- Vertical Displacement (mm)

- Pore Water Pressure (kPa)

**Dates:**
- 29-Jul-09
PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 4 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

![Graph showing shear stress results over time for different dates.](image)

**Normal Stress:** 250 kPa

**Age:** 4 hours

**Paste Solids Composition:**
- Binder: 3% Binder (50% PC 50% Flyash)
- Other: 96.5% Tails
Williams Operating Corporation

Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 4 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with horizontal displacement (mm) and time (s) on the x-axis, and shear stress (KPa) on the y-axis.

![Graph showing vertical displacement (mm) with time (s) on the x-axis and vertical displacement (mm) on the y-axis.

![Graph showing pore water pressure (kPa) with time (s) on the x-axis and pore water pressure (kPa) on the y-axis.]}
**APPENDIX 3.1.4.1**

**MINE:**
Williams Operating Corporation

**PASTE SOLIDS COMPOSITION:**
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

**AGE:**
12 hours

**NORMAL STRESS:**
50 kPa

**SHEAR STRESS RESULTS:**

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>500</td>
<td>-0.5</td>
</tr>
<tr>
<td>1000</td>
<td>-1</td>
</tr>
<tr>
<td>1500</td>
<td>-1.5</td>
</tr>
<tr>
<td>2000</td>
<td>-2</td>
</tr>
<tr>
<td>2500</td>
<td>-2.5</td>
</tr>
</tbody>
</table>

**Horizontal Displacement (mm):**

<table>
<thead>
<tr>
<th>Horizontal Displacement (mm)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shear Stress (KPa)</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

**Graphs:**

1. **Shear Stress vs. Horizontal Displacement:**
   - Blue line: 14-Oct-10 A
   - Red line: 14-Oct-10 B

2. **Vertical Displacement vs. Time:**
   - Blue line: 14-Oct-10 A
   - Red line: 14-Oct-10 B
MINE: Williams Operating Corporation

PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 12 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Shear Stress vs Horizontal Displacement Graph]

![Shear Stress vs Time Graph]
MINE: Williams Operating Corporation

PASTE SOLIDS COMPOSITION:
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

NORMAL STRESS: 250 kPa

AGE: 12 hours

SHEAR STRESS RESULTS:

[Graph showing shear stress results with horizontal and vertical displacement against time and shear stress.]
SHEAR STRESS RESULTS:

![Graph showing shear stress results](image-url)
SHEAR STRESS RESULTS:

- **Shear Stress (KPa)**
  - 05-Aug-2009
  - 11-Nov-2009

- **Horizontal Displacement (mm)**
  - 05-Aug-2009
  - 11-Nov-2009

- **Vertical Displacement (mm)**
  - 05-Aug-2009
  - 11-Nov-2009

- **Pore Water Pressure (kPa)**
  - 15-Jun-09 a
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

![Shear Stress Graph](image)

![Vertical Displacement Graph](image)

![Pore Water Pressure Graph](image)
MINE: Williams Operating Corporation
APPENDIX 3.1.4.1

PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)

COMPOSITION: Other: 96.5% Tails

AGE: 24 hours

NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:
MINE: Williams Operating Corporation

PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 48 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:
PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 48 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

![Graph showing shear stress results over time with horizontal displacement, vertical displacement, and pore water pressure over time.]

- Horizontal Displacement (mm) vs. Shear Stress (kPa)
- Vertical Displacement (mm) vs. Time (s)
- Pore Water Pressure (kPa) vs. Time (s)
**MINE:**
Williams Operating Corporation

**PASTE SOLIDS COMPOSITION:**
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

**AGE:**
48 hours

**NORMAL STRESS:**
250 kPa

**SHEAR STRESS RESULTS:**

![Graph showing shear stress results with multiple lines for different dates: 31-Jul-09, 07-Aug-09 A, 07-Aug-09 B, 16-Oct-10.](image)

- Shear Stress (KPa)
- Horizontal Displacement (mm)

- 31-Jul-09
- 07-Aug-09 A
- 07-Aug-09 B
- 16-Oct-10

![Graph showing vertical displacement over time with multiple lines for different dates: 31-Jul-09, 7-Aug-09 A, 7-Aug-09 B, 16-Oct-10.](image)

- Vertical Displacement (mm)
- Time (s)

- 31-Jul-09
- 7-Aug-09 A
- 7-Aug-09 B
- 16-Oct-10

---

458
MINE: Williams Operating Corporation

PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 48 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph](image)

![Vertical Displacement Graph](image)

![Pore Water Pressure Graph](image)
MINE: Williams Operating Corporation

PASTE SOLIDS COMPOSITION:
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 96 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

---

**Shear Stress Results**

![Graph showing shear stress results](image)

- **Shear Stress (KPa)**
  - Y-axis range: -15 to 40
  - X-axis range: -4 to 10

**Horizontal Displacement (mm)**

- X-axis range: 0 to 10
- Y-axis range: -15 to 15

**Time (s)**

- X-axis range: 0 to 3000
- Y-axis range: 0 to 10

---

**Vertical Displacement (mm)**

- X-axis range: 0 to 3000
- Y-axis range: -6 to 8

---

**Graphs**

- 04-Aug-09
- 06-Dec-09
**MINE:** Williams Operating Corporation

**PASTE SOLIDS COMPOSITION:**
- Binder: 3% Binder (50% PC 50% Flyash)
- Other: 96.5% Tails

**AGE:** 96 hours

**NORMAL STRESS:** 50 kPa

**SHEAR STRESS RESULTS:**

![Graph 1: Shear Stress vs. Horizontal Displacement](image1)

- Shear Stress (KPa) vs. Horizontal Displacement (mm)
- Dates: 28-Jul-09, 04-Aug-09, 10-Nov-10

![Graph 2: Vertical Displacement vs. Time](image2)

- Vertical Displacement (mm) vs. Time (s)
- Dates: 28-Jul-09, 04-Aug-09, 10-Nov-10
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

[Shear Stress vs. Horizontal Displacement graphs]

[Vertical Displacement vs. Time graphs]

[Pore Water Pressure vs. Time graphs]
SHEAR STRESS RESULTS:

![Shear Stress Graph](image1)

![Vertical Displacement Graph](image2)

![Pore Water Pressure Graph](image3)
MINE: Williams Operating Corporation

PASTE SOLIDS:
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 168 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time with data points for 27-Nov-09 and 12-Dec-09.]

![Graph showing vertical displacement over time with data points for 27-Nov-09 and 06-Dec-09.]

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Vertical Displacement (mm) vs. Time (s)
SHEAR STRESS RESULTS:

- **MINE**: Williams Operating Corporation
- **PASTE SOLIDS COMPOSITION**:
  - Binder: 3% Binder (50% PC 50% Flyash)
  - Other: 96.5% Tails
- **AGE**: 168 hours
- **NORMAL STRESS**: 50 kPa

### Horizontal Displacement vs. Shear Stress

- **Graph**: Horizontal displacement in mm plotted against shear stress in kPa.
- **Data Points**:
  - 27-Nov-09
  - 28-Nov-09

### Vertical Displacement vs. Time

- **Graph**: Vertical displacement in mm plotted against time in seconds.
- **Data Points**:
  - 27-Nov-09
  - 28-Nov-09
MINE: Williams Operating Corporation
APPENDIX 3.1.4.1

PASTE SOLIDS: Binder: 3% Binder (50% PC 50% Flyash)
COMPOSITION: Other: 96.5% Tails
AGE: 168 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Shear Stress (KPa) vs. Time (s)

Vertical Displacement (mm) vs. Time (s)
MINE: Williams Operating Corporation

PASTE SOLIDS COMPOSITION: Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 168 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

**NORMAL STRESS:**

- Paste solids composition:
  - Shear stress (KPa)
  - Horizontal displacement (mm)

- Time (s)
  - Vertical displacement (mm)

- Dates:
  - 27-Nov-09
  - 28-Nov-09
  - 09-Dec-09

- Graphs show shear stress and displacement over time for different dates.
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm) graph.

- Shear Stress peaks and drops over time.
- Horizontal Displacement remains relatively constant.

22-Jan-09 data line on the graph.
SHEAR STRESS RESULTS:

**MINE:** Williams Operating Corporation

**PASTE SOLIDS COMPOSITION:**
- Binder: 3% Binder (50% PC 50% Flyash)
- Other: 96.5% Tails

**AGE:** 384 hours

**NORMAL STRESS:** 50 kPa

![Graph](image-url)
MINE: Williams Operating Corporation

PASTE SOLIDS COMPOSITION:
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 384 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time.](image)

- **Horizontal Displacement (mm)**
- **Shear Stress (KPa)**
- **Time (s)**
- **Vertical Displacement (mm)**

Date: 22-Jan-09
MINE: Williams Operating Corporation

PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tails

AGE: 384 hours

NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results](image)

- Horizontal Displacement (mm)
- Vertical Displacement (mm)
- Time (s)
- Shear Stress (kPa)
SHEAR STRESS RESULTS:

- **Shear Stress (KPa)**: The graph shows the shear stress plotted against horizontal displacement. The stress peaks at around 120 KPa, indicating a significant shear force.

- **Horizontal Displacement (mm)**: The horizontal displacement increases as the shear stress decreases, suggesting a relation between shear stress and displacement.

- **Time (s)**: The vertical displacement graph shows increased displacement over time, indicating creep or relaxation effects.

- **Vertical Displacement (mm)**: The vertical displacement increases linearly with time, suggesting a steady creep or deformation.

These results are indicative of the shear behavior of the material under the specified conditions.
SHEAR STRESS RESULTS:

- Horizontal Displacement (mm) vs. Shear Stress (kPa)
- Vertical Displacement (mm) vs. Time (s)
**PASTE SOLIDS**

- **Binder:** 3% Binder (50% PC 50% Flyash)
- **Other:** 96.5% Tails

**NORMAL STRESS:** 250 kPa

**AGE:** 1344 hours

**SHEAR STRESS RESULTS:**

**NORMAL STRESS:**

**MINE:** APPENDIX 3.1.4.1

**PASTE SOLIDS COMPOSITION:**

- **AGE:**
  - 0
  - 50
  - 100
  - 150
  - 200
  - 250
  - 300

**Horizontal Displacement (mm)**

**Shear Stress (KPa)**

07-Feb-11

**Vertical Displacement (mm)**

07-Feb-11

**Time (s)**

0 100 200 300 400 500 600 700

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
SHEAR STRESS RESULTS:

[Graph showing shear stress results with two lines representing different dates: 07-Feb-11 A and 07-Feb-11 B.]

[Graph showing vertical displacement over time with two lines representing different dates: 07-Feb-11 A and 07-Feb-11 B.]
CONSOLIDATION RESULTS:

1. **Void Ratio (normalized to 1)**
   - Stress (kPa)
   - Data points for different dates are presented.

2. **Vertical Displacement (mm)**
   - Time (s)
   - Comparison of displacement over time for different dates.

3. **Pore Water Pressure (kPa)**
   - Time (s)
   - Measurement of pore water pressure change over time.
CONSOLIDATION RESULTS:

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings

**AGE:** 4 hours

**NORMAL STRESS:** 100 kPa

**CONSOLIDATION RESULTS:**

1. **Void Ratio (normalized to 1) vs. Stress (kPa):**
   - 29-Jul-09
   - 13-Oct-10

2. **Vertical Displacement (mm) vs. Time (s):**
   - 29-Jul-09
   - 13-Oct-10

3. **Vertical Displacement (mm) vs. Time (s):**
   - 29-Jul-09
MINE: Williams Mining Corporation
PASTE Composition: Binder: 3% (50% PC 50% Flyash) Other: 96.5% Tailings
AGE: 4 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

![Graph 1: Void Ratio vs. Stress](image1)
![Graph 2: Vertical Displacement vs. Time](image2)
![Graph 3: Vertical Displacement vs. Time](image3)
CONSOLIDATION RESULTS:

**CONSOLIDATION RESULTS:**

- **MINE:** Williams Mining Corporation
- **PASTE COMPOSITION:** Binder: 3% (50% PC 50% Flyash), Other: 96.5% Tailings
- **AGE:** 4 hours
- **NORMAL STRESS:** 400 kPa

**PASTE COMPOSITION:**

- **AGE:**
  - 0.6
  - 0.65
  - 0.7
  - 0.75
  - 0.8
  - 0.85
  - 0.9
  - 0.95
  - 1

- **NORMAL STRESS:**
  - 1 10 100 1000

**VOID RATIO (NORMALIZED TO 1):**

- **STRESS (kPa):**
  - 1
  - 10
  - 100
  - 1000

- **VERTICAL DISPLACEMENT (mm):**
  - 0
  - -1
  - -2
  - -3
  - -4
  - -5
  - -6
  - -7
  - -8

- **TIME (s):**
  - 0
  - 500
  - 1000
  - 1500
  - 2000
  - 2500

**Graphs:**

1. **Graph 1:** Void Ratio (normalized to 1) vs. Stress (kPa)
   - 13-Oct-10 A
   - 13-Oct-10 B

2. **Graph 2:** Vertical Displacement (mm) vs. Time (s)
   - 13-Oct-10 A
   - 13-Oct-10 B
CONSOLIDATION RESULTS:

- **MINE:** Williams Mining Corporation
- **PASTE COMPOSITION:** Binder: 3% (50% PC 50% Flyash)
  Other: 96.5% Tailings
- **AGE:** 12 hours
- **NORMAL STRESS:** 50 kPa

**CONSOLIDATION RESULTS:**

- **CONSOLIDATION RESULTS (Void Ratio vs. Stress):**
  - **Void Ratio (normalized to 1):**
  - **Stress (kPa):** 0.9, 0.91, 0.92, 0.93, 0.94, 0.95, 0.96, 0.97, 0.98, 0.99, 1

- **CONSOLIDATION RESULTS (Vertical Displacement vs. Time):**
  - **Vertical Displacement (mm):** -1.2, -1, -0.8, -0.6, -0.4, -0.2, 0
  - **Time (s):** 0, 200, 400, 600, 800, 1000, 1200
CONSOLIDATION RESULTS:

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings

**AGE:** 12 hours

**NORMAL STRESS:** 100 kPa

**CONSOLIDATION RESULTS:**

- **Stress (kPa):** 0.8, 0.82, 0.84, 0.86, 0.88, 0.9, 0.92, 0.94, 0.96, 0.98, 1
- **Void Ratio (normalized to 1):** 1, 0.98, 0.96, 0.94, 0.92, 0.9, 0.88, 0.86, 0.84, 0.82, 0.8
- **Time (s):** 14-Oct-10, 0, 200, 400, 600, 800, 1000, 1200
- **Vertical Displacement (mm):** 0, -0.5, -1, -1.5, -2, -2.5, -3
CONSOLIDATION RESULTS:

1. **MINE**: Williams Mining Corporation
2. **PASTE COMPOSITION**: Binder: 3% (50% PC 50% Flyash), Other: 96.5% Tailings
3. **AGE**: 12 hours
4. **NORMAL STRESS**: 250 kPa

**CONSOLIDATION RESULTS**:

![Consolidation curve](image_url)
CONSOLIDATION RESULTS:

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings

**AGE:** 12 hours

**NORMAL STRESS:** 400 kPa

---

**CONSOLIDATION RESULTS GRAPH:**

- **Stress (kPa):** 0.7 to 1
- **Void Ratio (normalized to 1):** 0.7 to 1
- **Vertical Displacement (mm):** -6 to 0

---

**Graphs:**

1. **Stress vs. Void Ratio:**
   - Stress range: 1 to 1000 kPa
   - Void Ratio (normalized to 1) range: 0.7 to 1
   - Data points for 14-Oct-10

2. **Time vs. Vertical Displacement:**
   - Time range: 0 to 1200 s
   - Vertical Displacement (mm) range: -6 to 0
   - Data points for 14-Oct-10
CONSOLIDATION RESULTS:

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- **Binder:** 3% (50% PC 50% Flyash)
- **Other:** 96.5% Tailings

**AGE:** 24 hours

**NORMAL STRESS:** 50 kPa

**CONSOLIDATION RESULTS:**

1. **Graph 1:**
   - **Y-axis:** Void Ratio (normalized to 1)
   - **X-axis:** Stress (kPa)
   - Data points for:
     - 05-Aug-09
     - 11-Nov-09
     - 17-Oct-10

2. **Graph 2:**
   - **Y-axis:** Vertical Displacement (mm)
   - **X-axis:** Time (s)
   - Data points for:
     - 05-Aug-09
     - 11-Nov-09
     - 17-Oct-10

The graphs illustrate the consolidation process under varying conditions, showing changes in void ratio and vertical displacement over time.
CONSOLIDATION RESULTS:

---

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings

**AGE:** 24 hours

**NORMAL STRESS:** 100 kPa

---

**CONSOLIDATION RESULTS:**

![Stress-Volume Diagram](attachment:stress_volume.png)

![Vertical Displacement vs. Time](attachment:vertical_displacement.png)
CONSOLIDATION RESULTS:

- **MINE:** Williams Mining Corporation
- **PASTE COMPOSITION:** Binder: 3% (50% PC 50% Flyash), Other: 96.5% Tailings
- **AGE:** 4 hours
- **NORMAL STRESS:** 250 kPa

Graphs showing:
- Void Ratio (normalized to 1) vs. Stress (kPa)
- Vertical Displacement (mm) vs. Time (s)
**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- **Binder:** 3% (50% PC 50% Flyash)
- **Other:** 96.5% Tailings

**AGE:** 24 hours

**NORMAL STRESS:** 400 kPa

### CONSOLIDATION RESULTS:

#### Void Ratio (normalized to 1)

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Void Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.85</td>
</tr>
<tr>
<td>10</td>
<td>0.8</td>
</tr>
<tr>
<td>100</td>
<td>0.75</td>
</tr>
<tr>
<td>1000</td>
<td>0.7</td>
</tr>
</tbody>
</table>

#### Stress (kPa) vs. Void Ratio

- **11-Nov-09**
- **17-Oct-10**

#### Vertical Displacement (mm) vs. Time (s)

- **11-Nov-09**
- **17-Oct-10**
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**Paste Composition:**
- **Binder:** 3% (50% PC, 50% Flyash)
- **Other:** 96.5% Tailings

**Age:** 48 hours

**Normal Stress:** 100 kPa

**MINE:** Williams Mining Corporation

**APPENDIX 3.1.4.2**
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:
MINE: Williams Mining Corporation
PASTE COMPOSITION: Binder: 3% (50% PC 50% Flyash)
Other: 96.5% Tailings
AGE: 96 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

![Consolidation chart with data points for different dates and times.]
MINE: Williams Mining Corporation
PASTE: Binder: 3% (50% PC 50% Flyash)
COMPOSITION: Other: 96.5% Tailings
AGE: 96 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

[Graphs showing consolidation results with void ratio normalized to 1 and vertical displacement over time.]
CONSOLIDATION RESULTS:

- **Void Ratio (normalized to 1)**
- **Stress (kPa)**
- **Time (s)**
- **Vertical Displacement (mm)**
- **PWP (kPa)**
**CONSOLIDATION RESULTS:**

- **VOID RATIO:**
  - 28-Jul-09
  - 06-Dec-09
  - 10-Nov-10

- **VERTICAL DISPLACEMENT:**
  - 28-Jul-09
  - 06-Dec-09
  - 10-Nov-10

- **PWP:**
  - 28-Jul-09
CONSOLIDATION RESULTS:

---

**CONSOLIDATION RESULTS:**

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- **Binder:** 3% (50% PC 50% Flyash)
- **Other:** 96.5% Tailings

**AGE:** 168 hours

**NORMAL STRESS:** 50 kPa

---

**VOID RATIO (normalized to 1):**

- **Stress (kPa):** 0.8, 0.82, 0.84, 0.86, 0.88, 0.9, 0.92, 0.94, 0.96, 0.98, 1

**Time (s):** 27-Nov-09, 28-Nov-09

---

**VERTICAL DISPLACEMENT (mm):**

- **Time (s):** 0 to 500

---

**CONSOLIDATION RESULTS:**

---

**CONSOLIDATION RESULTS:**

---

**CONSOLIDATION RESULTS:**
CONSOLIDATION RESULTS:

**void ratio (normalized to 1)**

![Graph showing void ratio over stress (kPa)]

**vertical displacement (mm)**

![Graph showing vertical displacement over time (s)]

---

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings

**AGE:** 168 hours

**NORMAL STRESS:** 100 kPa

---

**CONSOLIDATION RESULTS:**

- **Void Ratio (normalized to 1):**
  - 27-Nov-09
  - 28-Nov-09
  - 09-Dec-09

- **Vertical Displacement (mm):**
  - 27-Nov-09
  - 28-Nov-09
  - 09-Dec-09
CONSOLIDATION RESULTS:

**PASTE COMPOSITION:**
- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings
- Normal Stress: 250 kPa
- Age: 168 hours

**CONSOLIDATION RESULTS:**

- Stress (kPa) vs. Void Ratio (normalized to 1)
- Time (s) vs. Vertical Displacement (mm)

Graphs showing consolidation results for different dates (27-Nov-09, 28-Nov-09, 09-Dec-09).
CONSOLIDATION RESULTS:

**PASTE COMPOSITION:**

- Binder: 3% (50% PC 50% Flyash)
- Other: 96.5% Tailings

**AGE:** 168 hours

**NORMAL STRESS:** 400 kPa
CONSOLIDATION RESULTS:

- **Paste Composition:**
  - Binder: 3% (50% PC 50% Flyash)
  - Other: 96.5% Tailings

- **Age:** 384 hours

- **Normal Stress:** 50 kPa

**Graph:**
- Void Ratio vs. Stress (kPa)
- Vertical Displacement vs. Time (s)

**Graph Details:**
- Void Ratio (normalized to 1)
- Stress (kPa)
- Vertical Displacement (mm)
- Time (s)

**Dates:**
- 22-Jan-10
Williams Mining Corporation

Binder: 3% (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 384 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

### Paste Composition:

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<tr>
<th>Stress (kPa)</th>
<th>Void Ratio (normalized to 1)</th>
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<tbody>
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</tbody>
</table>

### Vertical Displacement:

<table>
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<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
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<tr>
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<td>50</td>
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<td>-0.6</td>
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<td>-0.8</td>
</tr>
<tr>
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</tr>
<tr>
<td>300</td>
<td>-1.2</td>
</tr>
<tr>
<td>350</td>
<td>-1.4</td>
</tr>
<tr>
<td>400</td>
<td>-1.6</td>
</tr>
</tbody>
</table>

- **22-Jan-10**
CONSOLIDATION RESULTS:

**Void Ratio (normalized to 1):**

- **Stress (kPa):** 0.8, 0.82, 0.84, 0.86, 0.88, 0.9, 0.92, 0.94, 0.96, 0.98, 1

- **Time (s):** 0, 50, 100, 150, 200, 250, 300

- **Vertical Displacement (mm):** -3.5, -3, -2.5, -2, -1.5, -1, -0.5, 0

**Graphs:**
- Graph of Void Ratio vs. Stress
- Graph of Vertical Displacement vs. Time
CONSOLIDATION RESULTS:

**Stress (kPa)**

0.9 0.91 0.92 0.93 0.94 0.95 0.96 0.97 0.98 0.99

**Void Ratio (normalized to 1)**

0 0.9 0.91 0.92 0.93

**Vertical Displacement (mm)**

0 0.1 0.2 0.3 0.4 0.5 0.6

**Time (s)**

0 200 400 600 800 1000 1200
CONSOLIDATION RESULTS:

**Void Ratio (normalized to 1)**

- **Stress (kPa):** 0.95, 0.955, 0.96, 0.965, 0.97, 0.975, 0.98, 0.985, 0.99, 0.995

**Vertical Displacement (mm)**

- **Time (s):** 0, 200, 400, 600, 800, 1000

---

**MINE:** Williams Mining Corporation

**PASTE COMPOSITION:**
- **Binder:** 3% (50% PC 50% Flyash)
- **Other:** 96.5% Tailings

**AGE:** 1344 hours

**NORMAL STRESS:** 100 kPa
CONSOLIDATION RESULTS:

- **Paste Composition:**
  - Age:
  - Normal Stress: 250 kPa

- **CONSOLIDATION RESULTS:**
  - **Stress (kPa):**
    - 0.9
    - 0.92
    - 0.94
    - 0.96
    - 0.98
  - **Void Ratio (normalized to 1):**
    - 0
    - 0.2
    - 0.4
    - 0.6
    - 0.8
    - 1
  - **Vertical Displacement (mm):**
    - 0
    - 0.2
    - 0.4
    - 0.6
    - 0.8
    - 1
    - 1.2
    - 1.4
  - Time (s): 0 - 1000
MINE: Williams Mining Corporation

PASTE COMPOSITION:
Binder: 3% (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 1344 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

[Graphs showing void ratio and vertical displacement over time]
MINE: Williams Operating Corporation

PASTE SOLIDS COMPOSITION:
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 4 hours

APPENDIX 3.1.4.3

\[ y = 0.7616x + 5.3163 \]
\[ R^2 = 0.998 \]

\[ y = 0.7407x + 7.6453 \]
\[ R^2 = 0.9963 \]
Williams Operating Corporation

PASTE SOLIDS COMPOSITION:
- Binder: 3% Binder (50% PC 50% Flyash)
- Other: 96.5% Tailings

AGE: 12 hours

\[
y = 0.7215x + 12.3441 \\
R^2 = 0.9986
\]

\[
y = 0.7211x + 9.8172 \\
R^2 = 0.9996
\]
Williams Operating Corporation

Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 24 hours

PASTE SOLIDS COMPOSITION:

MINE: APPENDIX 3.1.4.

\[ y = 0.8603x + 12.651 \]
\[ R^2 = 0.9945 \]

\[ y = 0.8458x + 8.8679 \]
\[ R^2 = 0.9971 \]
Williams Operating Corporation

Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 48 hours

MINE: APPENDIX 3.1.4.

PASTE SOLIDS COMPOSITION:

\[
y = 0.7871x + 15.647 \\
R^2 = 0.9953
\]

\[
y = 0.7262x + 10.677 \\
R^2 = 0.9995
\]
Williams Operating Corporation

Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tailings

96 hours

MINE: APPENDIX 3.1.4.3

PASTE SOLIDS COMPOSITION:

AGE: 96 hours

\[ y = 0.7327x + 36.828 \]
\[ R^2 = 0.9944 \]

\[ y = 0.7372x + 22.16 \]
\[ R^2 = 0.9939 \]
**PASTE SOLIDS**
- **Binder:** 3% Binder (50% PC 50% Flyash)
- **Other:** 96.5% Tailings
- **AGE:** 168 hours

**MINE:** APPENDIX 3.1.4.

### Peak

**Regression Equation:**
\[ y = 0.8069x + 32.884 \]
\[ R^2 = 0.992 \]

### Residual

**Regression Equation:**
\[ y = 0.791x + 24.026 \]
\[ R^2 = 0.9972 \]
PASTE SOLIDS Composition:
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 384 hours

\[
y = 0.7917x + 36.451 \\
R^2 = 0.9978
\]

\[
y = 0.7944x + 16.232 \\
R^2 = 0.9961
\]
PASTE SOLIDS
Binder: 3% Binder (50% PC 50% Flyash)
Other: 96.5% Tailings

AGE: 1344 hours

**Peaks**

\[ y = 0.6573x + 76.919 \]
\[ R^2 = 0.9865 \]

**Residuals**

\[ y = 0.7203x + 34.608 \]
\[ R^2 = 0.9981 \]
SHEAR STRESS RESULTS:

- **Shear Stress (KPa)**
- **Horizontal Displacement (mm)**

- **Vertical Displacement (mm)**
- **Time (s)**

- **Pore Water Pressure (kPa)**
- **Time (s)**
MINE: Williams Operating Corporation

PASTE SOLIDS
Binder: 5% Binder (100% PC)
Other: 95% Tails

AGE: 4 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

![Shear Stress Graph](image)

NORMAL STRESS: 250 kPa

MINE: Williams Operating Corporation

PASTE SOLIDS

Binder: 5% Binder (100% PC)

COMPOSITION: Other: 95% Tails

AGE: 4 hours

APPENDIX 3.1.5.1
SHEAR STRESS RESULTS:

Shear Stress (kPa) vs. Horizontal Displacement (mm)

Vertical Displacement (mm) vs. Time (s)

Pore Water Pressure (kPa) vs. Time (s)
SHEAR STRESS RESULTS:

---

**NORMAL STRESS:**

- Mine: Appendix 3.1.5.1
- Paste Solids: Binder: 5% Binder (100% PC), Other: 95% Tails
- Age: 24 hours
- Normal Stress: No Load

---

**Shear Stress Results:**

- Shear Stress (KPa) vs Horizontal Displacement (mm)
- Time (s)
- Vertical Displacement (mm)
- Pore Water Pressure (kPa)
Williams Operating Corporation

Binder: 5% Binder (100% PC)
Other: 95% Tails

AGE: 24 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

--- Diagrams ---

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)

Time (s) vs. Pore Water Pressure (kPa)
SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Vertical Displacement (mm) vs. Time (s)

Pore Water Pressure (kPa) vs. Time (s)
MINE: Williams Operating Corporation
PASTE SOLIDS: Binder: 5% Binder (100% PC)
COMPOSITION: Other: 95% Tails
AGE: 24 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph]

![Horizontal Displacement Graph]

![Vertical Displacement Graph]

![Pore Water Pressure Graph]
Williams Operating Corporation

Binder: 5% Binder (100% PC)
Other: 95% Tails

AGE: 24 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph]

![Horizontal Displacement Graph]

![Vertical Displacement Graph]

![Pore Water Pressure Graph]
SHEAR STRESS RESULTS:

1. **Shear Stress (KPa)**
   - X-axis: Horizontal Displacement (mm)
   - Y-axis: Shear Stress (KPa)
   - Time: 16-Jul-09

2. **Vertical Displacement (mm)**
   - X-axis: Time (s)
   - Y-axis: Vertical Displacement (mm)
   - Time: 16-Jul-09

3. **Pore Water Pressure (kPa)**
   - X-axis: Time (s)
   - Y-axis: Pore Water Pressure (kPa)
   - Time: 16-Jul-09
SHEAR STRESS RESULTS:

- Normal Stress: 50 kPa
- Age: 48 hours
- Normal Stress: 50 kPa

The graphs show the shear stress results over time, indicating changes in horizontal displacement, vertical displacement, and pore water pressure for different dates (26-Jun-09 and 02-Jul-09).
SHEAR STRESS RESULTS:

![Graph of shear stress results showing horizontal displacement over time for different dates (26-Jun-09 and 02-Jul-09).](image)

![Graph of vertical displacement over time for different dates (26-Jun-09 and 02-Jul-09).](image)

![Graph of pore water pressure over time for different dates (26-Jun-09 and 02-Jul-09).](image)
SHEAR STRESS RESULTS:

Shear Stress (kPa)

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)

Pore Water Pressure (kPa)

Time (s)
SHEAR STRESS RESULTS:

- Normal Stress: 400 kPa

---

Diagram showing shear stress and horizontal displacement over time.
SHEAR STRESS RESULTS:

![Shear Stress Graph](image1)

![Vertical Displacement Graph](image2)

![Pore Water Pressure Graph](image3)
MINE: Williams Operating Corporation
PASTE SOLIDS COMPOSITION: Binder: 5% Binder (100% PC) Other: 95% Tails
AGE: 96 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

[Graphs showing shear stress, horizontal displacement, vertical displacement, and pore water pressure over time for two different dates: 30-Jun-09 and 06-Jul-09.]
App 3.1.5.1

**MINE:** Williams Operating Corporation

**PASTE SOLIDS**
- Binder: 5% Binder (100% PC)
- Other: 95% Tails

**AGE:** 96 hours

**NORMAL STRESS:** 100 kPa

**SHEAR STRESS RESULTS:**

---

**Shear Stress (kPa) vs. Horizontal Displacement (mm):**

---

**Vertical Displacement (mm) vs. Time (s):**

---

**Pore Water Pressure (kPa) vs. Time (s):**
MINE: Williams Operating Corporation

PASTE SOLIDS
Binder: 5% Binder (100% PC)
Other: 95% Tails

AGE: 96 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)

Time (s) vs. Pore Water Pressure (kPa)
SHEAR STRESS RESULTS:

![Graph showing shear stress results.](image_url)
Williams Mining Corporation

Binder: 5% (50% PC 50% Flyash)
Other: 95% Tailings
Age: 4 hours
Normal Stress: 50 kPa

Consolidation Results:

- Void Ratio vs. Stress (kPa)
- Vertical Displacement vs. Time (s)
- Pore Water Pressure vs. Time (s)
CONSOLIDATION RESULTS:

- Void Ratio (normalized to 1)
- Pore Water Pressure (kPa)
- Vertical Displacement (mm)

Graphs showing the consolidation results over time for different dates and conditions.
CONSOLIDATION RESULTS:

- **MINE:** Williams Mining Corporation
- **PASTE COMPOSITION:** Binder: 5% (50% PC 50% Flyash), Other: 95% Tailings
- **AGE:** 4 hours
- **NORMAL STRESS:** 250 kPa

![Graphs showing consolidation results with normalized void ratio vs. stress, vertical displacement vs. time, and pore water pressure vs. time for different dates: 22-Jun-09, 24-Jun-09, 08-Jul-09, 13-Jul-09.](image-url)
CONSOLIDATION RESULTS:

- **Void Ratio (normalized to 1)**
  - 22-Jun-09
  - 08-Jul-09
  - 10-Jul-09

- **Stress (kPa)**
  - 0.5
  - 0.55
  - 0.6
  - 0.65
  - 0.7
  - 0.75
  - 0.8
  - 0.85
  - 0.9
  - 1

- **Pore Water Pressure (kPa)**
  - 22-Jun-09
  - 08-Jul-09
  - 10-Jul-09

- **Vertical Displacement (mm)**

- **Time (s)**
  - 22-Jun-09
  - 08-Jul-09
  - 10-Jul-09
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

MINE: Williams Mining Corporation
PASTE: Binder: 5% (50% PC 50% Flyash)
COMPOSITION: Other: 95% Tailings
AGE: 24 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

- Void Ratio
- Pore Water Pressure
- Vertical Displacement

Graphs showing data points for different dates and types of consolidation results.
CONSOLIDATION RESULTS:

1. **Paste Composition:**
   - **Binder:** 5% (50% PC 50% Flyash)
   - **Other:** 95% Tailings

2. **Age:** 24 hours

3. **Normal Stress:** 250 kPa

---

**Graphs:**

1. **Void Ratio vs. Stress**
   - Data points for different dates:
     - 18-Jun-09
     - 23-Jun-09
     - 07-Jul-09

2. **Vertical Displacement vs. Time**
   - Data for different dates:
     - 18-Jun-09
     - 23-Jun-09
     - 07-Jul-09

3. **Pore Water Pressure vs. Time**
   - Data for different dates:
     - 18-Jun-09
     - 23-Jun-09
     - 07-Jul-09
CONSOLIDATION RESULTS:

**Void Ratio (normalized to 1)**

- **Stress (kPa):** 0.8, 0.82, 0.84, 0.86, 0.88, 0.9, 0.92, 0.94, 0.96, 0.98, 1

**Pore Water Pressure (kPa):**

- 18-Jun-09
- 23-Jun-09
- 30-Jun-09
- 07-Jul-09

**Vertical Displacement (mm):**

- 18-Jun-09
- 23-Jun-09
- 30-Jun-09
- 07-Jul-09
CONSOLIDATION RESULTS:

![Graph showing void ratio results over stress](image)

![Graph showing vertical displacement over time](image)

![Graph showing pore water pressure over time](image)
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

1. **Void Ratio (normalized to 1)**
   - **Stress (kPa)**: 1, 5, 10, 50, 100, 500, 1000
   - **Void Ratio**: 0.8, 0.9, 0.88, 0.92, 0.96, 0.98
   - **Date**: 26-Jun-09

2. **Vertical Displacement (mm)**
   - **Time (s)**: 0, 50, 100, 150, 200, 250
   - **Vertical Displacement**: -1.6, -1.4, -1.2, -1, -0.8, -0.6, -0.4, -0.2, 0
   - **Date**: 26-Jun-09

3. **Pore Water Pressure (kPa)**
   - **Time (s)**: 0, 50, 100, 150, 200, 250
   - **Pore Water Pressure**: 10, 8, 6, 4, 2, 0
   - **Date**: 26-Jun-09
CONSOLIDATION RESULTS:

- **Paste Composition:**
  - Binder: 5% (50% PC 50% Flyash)
  - Other: 95% Tailings

- **Age:** 48 hours
- **Normal Stress:** 400 kPa

**Graphs:**

1. **Void Ratio vs. Stress (kPa):**
   - Data points for 02-Jul-09 and 16-Jul-09

2. **Vertical Displacement vs. Time (s):**
   - Data for 02-Jul-09 and 16-Jul-09

3. **Pore Water Pressure vs. Time (s):**
   - Data for 02-Jul-09 and 16-Jul-09
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**Graph 1:**
- Void Ratio (normalized to 1) vs. Stress (kPa)
- Data points for 30-Jun-09, 06-Jul-09, 20-Jul-09

**Graph 2:**
- Vertical Displacement (mm) vs. Time (s)
- Data points for 30-Jun-09, 06-Jul-09, 20-Jul-09

**Graph 3:**
- Pore Water Pressure (kPa) vs. Time (s)
- Data points for 30-Jun-09, 06-Jul-09, 20-Jul-09
CONSOLIDATION RESULTS:

- **Paste Composition:**
  - **Binder:** 5% (50% PC 50% Flyash)
  - **Other:** 95% Tailings

- **Age:** 96 hours

- **Normal Stress:** 250 kPa

**Graphs:**
- **Void Ratio vs. Stress (kPa):**
- **Vertical Displacement vs. Time (s):**
- **Pore Water Pressure vs. Time (s):**
CONSOLIDATION RESULTS:

- **MINE:** Williams Mining Corporation
- **PASTE COMPOSITION:** Binder: 5% (50% PC 50% Flyash)
  Other: 95% Tailings
- **AGE:** 96 hours
- **NORMAL STRESS:** 400 kPa

** void ratio (normalized to 1) vs. Stress (kPa)**

- **void ratio (normalized to 1):**
  - 30-Jun-09: ◆
  - 06-Jul-09: ■

**vertical displacement (mm) vs. Time (s)**

- **vertical displacement (mm):**
  - 30-Jun-09: ●
  - 06-Jul-09: ■

**pore water pressure (kPa) vs. Time (s)**

- **pore water pressure (kPa):**
  - 30-Jun-09: ●
  - 06-Jul-09: ■
APPENDIX 3.1.5.3

MINE: Williams Operating Corporation

PASTE SOLIDS COMPOSITION:
- Binder: 5% Binder (100% PC)
- Other: 95% Tailings

AGE: 4 hours

\[ y = 0.7577x + 10.097 \]
\[ R^2 = 0.9962 \]

\[ y = 0.7209x + 10.219 \]
\[ R^2 = 0.994 \]
**PASTE SOLIDS COMPOSITION:**
- **Binder:** 5% Binder (100% PC)
- **Other:** 95% Tailings
- **24 hours**

**MINE:** APPENDIX 3.1.5.

**Shear Stress** vs. **Normal Stress** (kPa)

- **Peak**
  - \( y = 0.8862x + 17.741 \)
  - \( R^2 = 0.9939 \)

- **Residual**
  - \( y = 0.8948x + 6.3707 \)
  - \( R^2 = 0.9875 \)

**Test Results**
- 95% Conf. Int.
- 95% Pred. Int.
PASTE SOLIDS COMPOSITION:
Binder: 5% Binder (100% PC)
Other: 95% Tailings

AGE: 48 hours

MINE: APPENDIX 3.1.5.

\[ y = 0.813x + 19.838 \]
\[ R^2 = 0.9947 \]

\[ y = 0.827x + 7.1622 \]
\[ R^2 = 0.9926 \]
**PASTE SOLIDS COMPOSITION:**

- **Binder:** 5% Binder (100% PC)
- **Other:** 95% Tailings

**AGE:**

- 96 hours

---

**APPENDIX 3.1.5.3**

**MINE:**

- Williams Operating Corporation

![Graph 1](Peak)

\[ y = 0.845x + 36.846 \]

\[ R^2 = 0.9934 \]

![Graph 2](Residual)

\[ y = 0.7427x + 29.246 \]

\[ R^2 = 0.9931 \]
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

4 hours
No Load

SHEAR STRESS RESULTS:

[Graph showing shear stress results with horizontal displacement vs. shear stress and time vs. vertical displacement graphs.]
MINE: Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 2.5% Binder (100% Pre-Mix)
- **Other:** 97.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 4 hours

**NORMAL STRESS:** 50 kPa

**SHEAR STRESS RESULTS:**

- **NORMAL STRESS:**
- **SHEAR STRESS RESULTS:**

![Graphs showing shear stress results](image)
PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 4 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

[Graphs showing shear stress results over time, with horizontal and vertical displacement measurements and pore water pressure over time.]
**MINE:** Kidd

**APPENDIX 3.1.6.1**

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 2.5% Binder (100% Pre-Mix)
- **Other:** 97.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 4 hours

**NORMAL STRESS:** 250 kPa

**SHEAR STRESS RESULTS:**

---

**Shear Stress (KPa) vs. Horizontal Displacement (mm) Graph:**
- Blue line: 03-Apr-10
- Red line: 24-Oct-10

**Time (s) vs. Vertical Displacement (mm) Graph:**
- Blue line: 03-Apr-10
- Red line: 24-Oct-10
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 4 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph]

NORMAL STRESS:

-400
-300
-200
-100
0
100
200
300
400

SHEAR STRESS RESULTS:

-8 -6 -4 -2 0 2 4 6 8 10 12
Shear Stress (KPa)
Horizontal Displacement (mm)

0 500 1000 1500 2000 2500 3000 3500 4000
Vertical Displacement (mm)

0 500 1000 1500 2000 2500 3000 3500 4000
Pore Water Pressure (kPa)

0 500 1000 1500 2000 2500 3000 3500 4000
Time (s)

0 500 1000 1500 2000 2500 3000 3500 4000
Pore Water Pressure (kPa)

0 500 1000 1500 2000 2500 3000 3500 4000
Time (s)
APPENDIX 3.1.6.1

MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 12 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 12 hours

NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Graph of Shear Stress Results](image)

![Graph of Vertical Displacement](image)

![Graph of Time](image)
**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- Binder: 2.5% Binder (100% Pre-Mix)
- Other: 97.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 12 hours

**NORMAL STRESS:** 250 kPa

**SHEAR STRESS RESULTS:**

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<th>Time (s)</th>
<th>Vertical Displacement (mm)</th>
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<tr>
<td>800</td>
<td>-0.5</td>
</tr>
<tr>
<td>1000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Horizontal Displacement (mm) vs. Shear Stress (KPa):**

- **23-Oct-10**

---

- **23-Oct-10**
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 12 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

---

**NORMAL STRESS:**

- MINE: APPENDIX 3.1.6.1
- COMPOSITION: PASTE SOLIDS
- AGE: 
  - -300
  - -200
  - -100
  - 0
  - 100
  - 200
  - 300
- **Shear Stress (KPa):**
  - **Horizontal Displacement (mm):**
- **23-Oct-10**

---

**SHEAR STRESS RESULTS:**

- **Time (s):**
  - 0
  - 500
  - 1000
  - 1500
  - 2000
  - 2500
  - 3000
- **Vertical Displacement (mm):**
  - **23-Oct-10**

---

**GRAPHS:**

1. Shear Stress vs. Horizontal Displacement
2. Vertical Displacement vs. Time

---

565
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:
**MINE:** Kidd  
**APPENDIX 3.1.6.1**

**PASTE SOLIDS COMPOSITION:**  
Binder: 2.5% Binder (100% Pre-Mix)  
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 24 hours

**NORMAL STRESS:** 50 kPa

**SHEAR STRESS RESULTS:**

![Shear Stress Graph](image-url)

![Time vs Displacement Graph](image-url)
Kidd
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 24 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time and displacement.](image-url)
MINE: Kidd

APPENDIX 3.1.6.1

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 24 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph](image)

![Vertical Displacement Graph](image)
APPENDIX 3.1.6.1

MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 24 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time for different days.
Shear Stress (KPa) vs. Horizontal Displacement (mm).]

![Graph showing vertical displacement over time for different days.
Vertical Displacement (mm) vs. Time (s).]

![Graph showing pore water pressure over time for different days.
Pore Water Pressure (kPa) vs. Time (s).]
PASTE SOLIDS
Binder: 2.5% Binder (100% Pre-Mix)
COMPOSITION: Other: 97.5% Tailings (55:45 Sand to Gold Tails)
AGE: 48 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

![Shear Stress Graph]

![Vertical Displacement Graph]
MINE: Kidd  
PASTE SOLIDS:  
Binder: 2.5% Binder (100% Pre-Mix)  
COMPOSITION:  
Other: 97.5% Tailings (55:45 Sand to Gold Tails)  
AGE: 48 hours  
NORMAL STRESS: 50 kPa  

SHEAR STRESS RESULTS:

![Shear Stress Graph](image-url)

The graphs show the shear stress and horizontal displacement over time for different dates ranging from 05-Apr-10 to 07-Nov-10. The data is color-coded for each date:

- 05-Apr-10: Blue
- 09-Apr-10: Red
- 15-Apr-10: Green
- 07-Nov-10: Purple

Additionally, there is a graph showing vertical displacement over time with similar color-coding:

- 05-Apr-10: Blue
- 09-Apr-10: Red
- 15-Apr-10: Green
- 07-Nov-10: Purple
PASTE SOLIDS
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 48 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 2.5% Binder (100% Pre-Mix)
- **Other:** 97.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 48 hours

**NORMAL STRESS:** 400 kPa

---

**NORMAL STRESS:**

-400 -300 -200 -100 0 100 200 300 400

**SHEAR STRESS RESULTS:**

-0.5 -1 -1.5 -2 -2.5 -3 -3.5

Horizontal Displacement (mm)

Time (s)

0 500 1000 1500 2000 2500 3000 3500 4000

Vertical Displacement (mm)

05-Apr-10 09-Apr-10 15-Apr-10 07-Nov-10
SHEAR STRESS RESULTS:

![Graph showing shear stress results.](image-url)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 96 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

Shear Stress (kPa)

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)

Pore Water Pressure (kPa)

Time (s)
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 96 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with horizontal displacement on the x-axis and shear stress on the y-axis. The graph compares data from 19-Apr-10 and 05-Nov-10.]

![Graph showing vertical displacement on the y-axis and time on the x-axis. The graph compares data from 19-Apr-10 and 05-Nov-10.]

MINE: Kidd
APPENDIX 3.1.6.1

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)
AGE: 96 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

- Shear Stress (kPa)
- Horizontal Displacement (mm)

- Vertical Displacement (mm)

- Pore Water Pressure (kPa)

- Time (s)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 96 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:
SHEAR STRESS RESULTS:

**Shear Stress (KPa)**

**Horizontal Displacement (mm)**

**Vertical Displacement (mm)**

**Time (s)**
**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 2.5% Binder (100% Pre-Mix)
- **Other:** 97.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 168 hours

**NORMAL STRESS:** 50 kPa

**SHEAR STRESS RESULTS:**

- **NORMAL STRESS:**
  - MINE: APPENDIX 3.1.6.1

- **PASTE SOLIDS:**
  - **COMPOSITION:**
    - **AGE:**
      - 13-Apr-10
      - 16-May-10

- **SHEAR STRESS RESULTS:**
  - **Horizontal Displacement (mm):**
    - **Shear Stress (KPa):**
      - 13-Apr-10
      - 16-May-10

- **Vertical Displacement (mm):**
  - **Time (s):**
    - 13-Mar-10
    - 16-May-10
**MINE:** Kidd  
**APPENDIX 3.1.6.1**

<table>
<thead>
<tr>
<th>PASTE SOLIDS</th>
<th>Binder: 2.5% Binder (100% Pre-Mix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPOSITION</td>
<td>Other: 97.5% Tailings (55:45 Sand to Gold Tails)</td>
</tr>
<tr>
<td>AGE</td>
<td>168 hours</td>
</tr>
<tr>
<td>NORMAL STRESS</td>
<td>100 kPa</td>
</tr>
</tbody>
</table>

**SHEAR STRESS RESULTS:**

![Shear Stress Graph](image1)

![Time Graph](image2)
Shear Stress Results:

- Normal Stress: 250 kPa
- Age: 168 hours
- Paste solids composition:
  - Binder: 2.5% Binder (100% Pre-Mix)
  - Other: 97.5% Tailings (55:45 Sand to Gold Tails)

Graphs showing shear stress and horizontal displacement over time for different dates (13-Apr-10, 20-Apr-10, 16-May-10) in mm and kPa respectively.
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 168 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time and displacement]

- Horizontal Displacement (mm)
- Vertical Displacement (mm)
- Time (s)
SHEAR STRESS RESULTS:
### Paste Solids Composition

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td><strong>Binder</strong></td>
<td>2.5% Pre-Mix</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>97.5% Tailings</td>
</tr>
</tbody>
</table>

#### Normal Stress

- **Stress**: 50 kPa

#### Shear Stress Results

**Graphs**:
- **Horizontal Displacement (mm)** vs. **Shear Stress (kPa)**
- **Time (s)** vs. **Vertical Displacement (mm)**

**Key Details**:
- Age: 360 hours

**Remarks**:
- Data from Appendix 3.1.6.1
SHEAR STRESS RESULTS:
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 360 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)
SHEAR STRESS RESULTS:
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 544 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Shear Stress Graph](image)

![Vertical Displacement Graph](image)

![Horizontal Displacement Graph](image)
SHEAR STRESS RESULTS:
Kidd Binder: 2.5% Binder (100% Pre-Mix)
Other: 97.5% Tailings (55:45 Sand to Gold Tails)

AGE: 544 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa)
Horizontal Displacement (mm)

Time (s)
Vertical Displacement (mm)
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - Binder: 2.5% (100% Pre-Mix)
  - Other: 97.5% (55:45 Sand to Gold Tails)
- **AGE:** 4 hours
- **NORMAL STRESS:** 50 kPa

**CONSOLIDATION RESULTS:**

- **Void Ratio (normalized to 1)** vs. **Stress (kPa)**
- **Vertical Displacement (mm)** vs. **Time (s)**
- **Pore Water Pressure (kPa)** vs. **Time (s)**
CONSOLIDATION RESULTS:

**MINE:** Kidd
**PASTE COMPOSITION:**
- Binder: 2.5% (100% Pre-Mix)
- Other: 97.5% (55:45 Sand to Gold Tails)
**AGE:** 4 hours
**NORMAL STRESS:** 100 kPa

### CONSOLIDATION RESULTS:

**CONSOLIDATION RESULTS:**

1. **Void Ratio (normalized to 1):**
   - Stress (kPa)
   - Normalized Void Ratio
   - Data points for different dates:
     - 03-Feb-10
     - 06-Apr-10
     - 14-Apr-10
     - 24-Oct-10

2. **Vertical Displacement (mm):**
   - Time (s)
   - Data points for different dates:
     - 03-Feb-10
     - 06-Apr-10
     - 14-Apr-10
     - 24-Oct-10

3. **Vertical Displacement (mm):**
   - Time (s)
   - Data points for 03-Feb-10
CONSOLIDATION RESULTS:

**CONSOLIDATION RESULTS:**

- **MINE:** Kidd
- **PASTE**
  - **Binder:** 2.5% (100% Pre-Mix)
  - **Other:** 97.5% (55:45 Sand to Gold Tails)
- **AGE:** 4 hours
- **NORMAL STRESS:** 250 kPa

**PASTE COMPOSITION:**

**CONSOLIDATION RESULTS**

**Void Ratio (normalized to 1)**

- **Stress (kPa):** 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1
- **Time (s):** 03-Apr-10, 24-Oct-10

**Vertical Displacement (mm)**

- **Time (s):** 0, 500, 1000, 1500, 2000
- **03-Apr-10**
- **24-Oct-10**
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - **Binder:** 2.5% (100% Pre-Mix)
  - **Other:** 97.5% (55:45 Sand to Gold Tails)
- **AGE:** 4 hours
- **NORMAL STRESS:** 400 kPa

![Graphs showing void ratio, vertical displacement, and pore water pressure over time.](image-url)
Kidd Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)

CONSOLIDATION RESULTS:

**CONSOLIDATION RESULTS:**

![Graph 1: Void Ratio (normalized to 1) vs. Stress (kPa)](image)

- **23-Oct-10 A**
- **23-Oct-10 B**

![Graph 2: Vertical Displacement (mm) vs. Time (s)](image)

- **23-Oct-10 A**
- **23-Oct-10 B**

**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binders:**
  - 2.5% (100% Pre-Mix)
- **Others:**
  - 97.5% (55:45 Sand to Gold Tails)

**AGE:** 12 hours

**NORMAL STRESS:** 50 kPa
MINE: Kidd
PASTE COMPOSITION: Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 12 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

![Graph of Void Ratio vs. Stress](image1)

![Graph of Vertical Displacement vs. Time](image2)
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:
MINE: Kidd
PASTE
Binder: 2.5% (100% Pre-Mix)
COMPOSITION:
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

![Graph 1: Stress vs. Void Ratio](image1)

- Stress (kPa)
- Void Ratio (normalized to 1)
- Dates: 03-Mar-10, 07-Apr-10, 21-Apr-10, 21-Oct-10A, 21-Oct-10B

![Graph 2: Time vs. Vertical Displacement](image2)

- Vertical Displacement (mm)
- Time (s)
- Dates: 03-Mar-10, 07-Apr-10, 21-Apr-10, 21-Oct-10A, 21-Oct-10B

APPENDIX 3.1.6.2
MINE: Kidd
PASTE:
- Binder: 2.5% (100% Pre-Mix)
- Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

![Graph showing Void Ratio vs. Stress and Vertical Displacement vs. Time](image)

- [Graph legend](image)

---

CONSOLIDATION RESULTS:

![Graph showing Void Ratio vs. Stress and Vertical Displacement vs. Time](image)

- [Graph legend](image)
CONSOLIDATION RESULTS:

- **MINE**: Kidd
- **PASTE COMPOSITION**: Binder: 2.5% (100% Pre-Mix), Other: 97.5% (55:45 Sand to Gold Tails)
- **AGE**: 24 hours
- **NORMAL STRESS**: 250 kPa

**Graphs:**
- **Void Ratio vs. Stress**: Showing data points for different dates.
- **Vertical Displacement vs. Time**: For March 3, April 7, April 21, October 21.
- **Other data points at different dates**.
Kidd

Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:
Kidd Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)

48 hours

NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

**MINE:** APPENDIX 3.1.6.2

**PASTE COMPOSITION:**

<table>
<thead>
<tr>
<th>Stress (kPa)</th>
<th>0.91</th>
<th>0.92</th>
<th>0.93</th>
<th>0.94</th>
<th>0.95</th>
<th>0.96</th>
<th>0.97</th>
<th>0.98</th>
<th>0.99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Void Ratio (normalized to 1)</td>
<td>1.00</td>
<td>0.99</td>
<td>0.98</td>
<td>0.97</td>
<td>0.96</td>
<td>0.95</td>
<td>0.94</td>
<td>0.93</td>
<td>0.92</td>
</tr>
</tbody>
</table>

**Time (s):**

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>0</th>
<th>200</th>
<th>400</th>
<th>600</th>
<th>800</th>
<th>1000</th>
<th>1200</th>
<th>1400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Displacement (mm)</td>
<td>0.00</td>
<td>-0.50</td>
<td>-1.00</td>
<td>-1.50</td>
<td>-2.00</td>
<td>-2.50</td>
<td>-3.00</td>
<td>-3.50</td>
</tr>
</tbody>
</table>

**Dates:**

- 05-Apr-10
- 09-Apr-10
- 15-Apr-10
- 07-Nov-10
CONSOLIDATION RESULTS:

**PASTE COMPOSITION:**
- **AGE:** 48 hours
- **NORMAL STRESS:** 100 kPa

**CONSOLIDATION RESULTS:**

- **Stress (kPa):**
  - 0.9
  - 0.91
  - 0.92
  - 0.93
  - 0.94
  - 0.95
  - 0.96
  - 0.97
  - 0.98
  - 0.99
  - 1

- **Void Ratio (normalized to 1):**
  - 1
  - 0.99
  - 0.98
  - 0.97
  - 0.96
  - 0.95
  - 0.94
  - 0.93
  - 0.92
  - 0.91
  - 0.9

- **Vertical Displacement (mm):**
  - 0
  - 0.5
  - 1
  - 1.5
  - 2
  - 2.5

- **Time (s):**
  - 0
  - 200
  - 400
  - 600
  - 800
  - 1000
  - 1200
  - 1400
  - 1600
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binder:** 2.5% (100% Pre-Mix)
- **Other:** 97.5% (55:45 Sand to Gold Tails)

**AGE:** 48 hours

**NORMAL STRESS:** 400 kPa

**CONSOLIDATION RESULTS:**

- **Void Ratio (normalized to 1):**
  - 0.8
  - 0.82
  - 0.84
  - 0.86
  - 0.88
  - 0.9

- **Stress (kPa):**
  - 1
  - 10
  - 100
  - 1000

- **Vertical Displacement (mm):**
  - 0
  - 1
  - 2
  - 3
  - 4
  - 5
  - 6

- **Time (s):**
  - 0
  - 500
  - 1000
  - 1500
  - 2000
CONSOLIDATION RESULTS:

- **MINE**: Kidd
- **PASTE**:
  - **Binder**: 2.5% (100% Pre-Mix)
  - **Other**: 97.5% (55:45 Sand to Gold Tails)
- **AGE**: 96 hours
- **NORMAL STRESS**: 50 kPa

**CONSOLIDATION RESULTS**:

1. **Void Ratio (normalized to 1)** vs. **Stress (kPa)**
   - Dates: 06-Mar-10, 14-Apr-10, 23-Apr-10, 27-Oct-10, 05-Nov-10

2. **Vertical Displacement (mm)** vs. **Time (s)**
   - Dates: 06-Mar-10, 14-Apr-10, 23-Apr-10, 27-Oct-10, 05-Nov-10

3. **Pore Water Pressure (kPa)** vs. **Time (s)**
   - Date: 06-Mar-10
MINE: Kidd
PASTE COMPOSITION:
Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 96 hours
NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

[Graph of Void Ratio vs. Stress (kPa)]

[Graph of Vertical Displacement (mm) vs. Time (s)]
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - Binder: 2.5% (100% Pre-Mix)
  - Other: 97.5% (55:45 Sand to Gold Tails)
- **AGE:** 96 hours
- **NORMAL STRESS:** 250 kPa

![Graphs showing consolidation results](image-url)
CONsolidation results:

- **Binder**: 2.5% (100% Pre-Mix)
- **Other**: 97.5% (55:45 Sand to Gold Tails)
- **Age**: 96 hours
- **Normal Stress**: 400 kPa

**MINE: Kidd**

**Appendix 3.1.6.2**

**Paste Composition:**

<table>
<thead>
<tr>
<th>Age</th>
<th>Normal Stress</th>
<th>Void Ratio (normalized to 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-Mar-10</td>
<td>0.7</td>
<td>1</td>
</tr>
<tr>
<td>19-Apr-10</td>
<td>0.75</td>
<td>1</td>
</tr>
<tr>
<td>27-Oct-10</td>
<td>0.8</td>
<td>1</td>
</tr>
<tr>
<td>05-Nov-10</td>
<td>0.85</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.95</td>
<td>1</td>
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<tr>
<td></td>
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<td>1</td>
</tr>
</tbody>
</table>

**Vertical Displacement (mm):**

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>06-Mar-10</th>
<th>19-Apr-10</th>
<th>27-Oct-10</th>
<th>05-Nov-10</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>-6</td>
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<td>50</td>
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<td>150</td>
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<td>200</td>
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<tr>
<td>250</td>
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**Pore Water Pressure (kPa):**

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>06-Mar-10</th>
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<tbody>
<tr>
<td>0</td>
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<td>70</td>
<td>10</td>
</tr>
<tr>
<td>80</td>
<td>0</td>
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</tbody>
</table>

**Graphs:**

- Graph 1: Void Ratio vs. Normal Stress
- Graph 2: Vertical Displacement vs. Time
- Graph 3: Pore Water Pressure vs. Time
CONSOLIDATION RESULTS:

For the Kidd Paste:
- **Binder**: 2.5% (100% Pre-Mix)
- **Other**: 97.5% (55:45 Sand to Gold Tails)
- **Age**: 168 hours
- **Normal Stress**: 50 kPa

**MINE: Appendix 3.1.6.2**

### Void Ratio vs. Stress (kPa)
- **Data Points**:
  - 13-Apr-10
  - 16-May-10

### Vertical Displacement vs. Time (s)
- **Data Points**:
  - 13-Apr-10
  - 16-May-10
CONSOLIDATION RESULTS:

![Graph showing consolidation results with data points and axes labeled for Void Ratio and Stress (kPa) on the x-axis and Vertical Displacement (mm) on the y-axis.](image-url)
MINE: Kidd
PASTE COMPOSITION: Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 168 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

![Graph 1](image1.png)

![Graph 2](image2.png)
MINE: Kidd
PASTE COMPOSITION: Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 168 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

---

**CONSOLIDATION RESULTS:**

**Paste Composition:**

**Age:**

<table>
<thead>
<tr>
<th>Normal Stress (kPa)</th>
<th>Void Ratio (normalized to 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7</td>
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</tr>
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<td>0.8</td>
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<td></td>
</tr>
</tbody>
</table>

**Stress (kPa):**

- 13-Apr-10
- 16-May-10

**Void Ratio (normalized to 1):**

- 13-Apr-10
- 16-May-10

---

**Vertical Displacement (mm):**

- 13-Apr-10
- 16-May-10

---

**Time (s):**

- 0
- 50
- 100
- 150
- 200
- 250
- 300

---

**CONSOLIDATION RESULTS:**

**Stress (kPa):**

- 13-Apr-10
- 16-May-10

---

**Vertical Displacement (mm):**

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>13-Apr-10</th>
<th>16-May-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-3.5</td>
<td>-3.5</td>
</tr>
<tr>
<td>50</td>
<td>-3.0</td>
<td>-3.0</td>
</tr>
<tr>
<td>100</td>
<td>-2.5</td>
<td>-2.5</td>
</tr>
<tr>
<td>150</td>
<td>-2.0</td>
<td>-2.0</td>
</tr>
<tr>
<td>200</td>
<td>-1.5</td>
<td>-1.5</td>
</tr>
<tr>
<td>250</td>
<td>-1.0</td>
<td>-1.0</td>
</tr>
<tr>
<td>300</td>
<td>-0.5</td>
<td>-0.5</td>
</tr>
</tbody>
</table>
MINE: Kidd
PASTE
Binder: 2.5% (100% Pre-Mix)
COMPOSITION: Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 360 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

![Graph 1](image1)

![Graph 2](image2)
CONSOLIDATION RESULTS:

- PASTE COMPOSITION:
  - Binder: 2.5% (100% Pre-Mix)
  - Other: 97.5% (55:45 Sand to Gold Tails)

- AGE: 360 hours

- NORMAL STRESS: 100 kPa

CONSOLIDATION RESULTS:

- Vertical Displacement (mm)
  - Time (s)

- Void Ratio (normalized to 1)
  - Stress (kPa)
MINING: Kidd
PASTE COMPOSITION:
Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 360 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:

- Void Ratio (normalized to 1)
- Stress (kPa)
- Vertical Displacement (mm)
- Time (s)

*Graphs showing the consolidation results with data points for 08-May-10 and 09-May-10.*
MINE: Kidd
PASTE COMPOSITION: Binder: 2.5% (100% Pre-Mix)
Other: 97.5% (55:45 Sand to Gold Tails)
AGE: 360 hours
NORMAL STRESS: 400 kPa

CONSOLIDATION RESULTS:

![Graph 1: Void Ratio vs. Stress](image1)

![Graph 2: Vertical Displacement vs. Time](image2)
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**Graph 1:**
- **Y-axis:** Void Ratio (normalized to 1)
- **X-axis:** Stress (kPa)
- **Label:** 13-Dec-10

**Graph 2:**
- **Y-axis:** Vertical Displacement (mm)
- **X-axis:** Time (s)
- **Label:** 13-Dec-10
CONSOLIDATION RESULTS:

![Graph showing void ratio against stress](image1)

![Graph showing vertical displacement against time](image2)
APPENDIX 3.1.6.3

**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 2.5% Binder (100% PC)
- **Other:** 97.5% Tailings

**AGE:** 4 hours

---

**Graphs:**
- **Peak**
  - Equation: $y = 0.7323x + 3.0036$
  - $R^2 = 0.992$

- **Residual**
  - Equation: $y = 0.7192x + 3.198$
  - $R^2 = 0.9931$
PASTE SOLIDS COMPOSITION:
Binder: 2.5% Binder (100% PC)
Other: 97.5% Tailings

AGE:
12 hours

Peak

\[ y = 0.7034x + 11.215 \]
\[ R^2 = 0.9961 \]

Residual

\[ y = 0.6824x + 10.398 \]
\[ R^2 = 0.9944 \]
PASTE SOLIDS COMPOSITION: Kidd
Binder: 2.5% Binder (100% PC)
Other: 97.5% Tailings

AGE: 24 hours

Peak

\[ y = 0.7207x + 5.7107 \]
\[ R^2 = 0.9883 \]

Residual

\[ y = 0.6787x + 4.1827 \]
\[ R^2 = 0.9917 \]
Kidd Binder: 2.5% Binder (100% PC)
Other: 97.5% Tailings

AGE: 48 hours

MINE: APPENDIX 3.1.6.

PASTE SOLIDS COMPOSITION:

\[ y = 0.7392x + 11.797 \]
\[ R^2 = 0.9962 \]

\[ y = 0.7056x + 7.8879 \]
\[ R^2 = 0.9969 \]
Kidd Binder: 2.5% Binder (100% PC)
Other: 97.5% Tailings
96 hours

MINE: APPENDIX 3.1.6.

PASTE SOLIDS COMPOSITION:

AGE:

- **Peak**
  - $y = 0.7044x + 30.085$
  - $R^2 = 0.9952$

- **Residual**
  - $y = 0.6864x + 21.309$
  - $R^2 = 0.9974$
### PASTE SOLIDS COMPOSITION:

- **Binder:** 2.5% Binder (100% PC)
- **Other:** 97.5% Tailings

### AGE:

168 hours

---

**Peak**

The regression equation for the peak data is:

\[ y = 0.7478x + 58.662 \]

\[ R^2 = 0.9658 \]

**Residual**

The regression equation for the residual data is:

\[ y = 0.7246x + 27.752 \]

\[ R^2 = 0.9762 \]

---

<table>
<thead>
<tr>
<th>Test Results</th>
<th>95% Conf. Int.</th>
<th>95% Pred. Int.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

![Peak Regression Graph](image1)

![Residual Regression Graph](image2)
Kidd Binder: 2.5% Binder (100% PC)
Other: 97.5% Tailings

360 hours

PASTE SOLIDS COMPOSITION:

AGE:

\[
y = 0.6003x + 155.09
\]
\[
R^2 = 0.8652
\]

\[
y = 0.7224x + 57.206
\]
\[
R^2 = 0.9733
\]
Kidd

Binder: 2.5% Binder (100% PC)
Other: 97.5% Tailings

544 hours

PASTE SOLIDS COMPOSITION: Kidd

AGE: 544 hours

\[ y = 0.4121x + 241.42 \]
\[ R^2 = 0.3626 \]

\[ y = 0.5061x + 105.21 \]
\[ R^2 = 0.98 \]
MINE: Kidd

PASTE SOLIDS COMPOSITION: Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 4 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

![Shear Stress Graph](image1)

![Time vs. Vertical Displacement](image2)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 4 hours

NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa)

Horizontal Displacement (mm)

Shear Stress (KPa)

Time (s)

Vertical Displacement (mm)
Kidd
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

4 hours

NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

MINE: APPENDIX 3.1.7.1

PASTE SOLIDS
COMPOSITION:

AGE: 4 hours

NORMAL STRESS: 100 kPa
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 4 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with time and displacement](image-url)

MINE: Kidd
APPENDIX 3.1.7.1

PASTE SOLIDS
COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 4 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with time and displacement](image-url)
MINE: Kidd

PASTE SOLIDS COMPOSITION: Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 4 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:
MINE: Kidd

PASTE SOLIDS COMPOSITION:

Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 12 hours

NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs Horizontal Displacement (mm)

Time (s) vs Vertical Displacement (mm)
**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 4.5% Binder (100% Pre-Mix)
- **Other:** 95.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 12 hours

**NORMAL STRESS:** 100 kPa

**SHEAR STRESS RESULTS:**

![Graph showing shear stress results](image_url)
APPENDIX 3.1.7.1

MINE: Kidd

PASTE SOLIDS COMPOSITION:
- Binder: 4.5% Binder (100% Pre-Mix)
- Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 12 hours

NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results](image-url)

Graphs showing shear stress and displacement over time.
MINE: Kidd

PASTE SOLIDS
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 12 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

<table>
<thead>
<tr>
<th>Normal Stress (kPa)</th>
<th>Time (s)</th>
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</thead>
<tbody>
<tr>
<td>-300</td>
<td>06-Oct-10</td>
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<tr>
<td>300</td>
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</table>

Shear Stress (KPa) vs. Horizontal Displacement (mm)

<table>
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<tr>
<th>Vertical Displacement (mm)</th>
<th>Time (s)</th>
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<tbody>
<tr>
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<tr>
<td>-0.5</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Vertical Displacement (mm) vs. Time (s)
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:

![Shear Stress Graph]

![Vertical Displacement Graph]
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 24 hours
NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

![Shear Stress Results Graph]

![Time vs. Vertical Displacement Graph]
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 24 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:
PASTE SOLIDS
Binder: 4.5% Binder (100% Pre-Mix)
COMPOSITION: Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

---

**Horizontal Displacement (mm)**

---

**Vertical Displacement (mm)**

---

**Time (s)**

---
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

48 hours
No Load

SHEAR STRESS RESULTS:

**NORMAL STRESS:**

![Graph of Normal Stress Results](image)

**PASTE SOLIDS COMPOSITION:**

<table>
<thead>
<tr>
<th>AGE</th>
<th>0</th>
<th>-5</th>
<th>-10</th>
<th>-15</th>
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<td>Time</td>
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<td>5</td>
<td>10</td>
<td>15</td>
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</tbody>
</table>

**SHEAR STRESS RESULTS:**

![Graph of Shear Stress Results](image)

**VERTICAL DISPLACEMENT:**

![Graph of Vertical Displacement](image)

**HORIZONTAL DISPLACEMENT:**

![Graph of Horizontal Displacement](image)
PASTE SOLIDS COMPOSITION:
- Binder: 4.5% Binder (100% Pre-Mix)
- Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 48 hours

NORMAL STRESS: 50 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results over time and displacement](graph.png)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 48 hours

NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa)

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)
MINE: Kidd
PASTE SOLIDS COMPOSITION: Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 48 hours
NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

SHEAR STRESS RESULTS:

![Graph showing shear stress results with time and displacement over different dates.](image-url)
MINE: Kidd

PASTE SOLIDS
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 48 hours

NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:
PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 96 hours
NORMAL STRESS: No Load

SHEAR STRESS RESULTS:
### Paste Solids Composition

- **Binder:** 4.5% Binder (100% Pre-Mix)
- **Other:** 95.5% Tailings (55:45 Sand to Gold Tails)

### Normal Stress

- 50 kPa

### Age

- 96 hours

### Shear Stress Results

<table>
<thead>
<tr>
<th>Date</th>
<th>Shear Stress (KPa)</th>
<th>Horizontal Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Jul-10</td>
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<td></td>
</tr>
<tr>
<td>20-Jul-10</td>
<td></td>
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</tr>
<tr>
<td>27-Jul-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04-Nov-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-Nov-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Vertical Displacement (mm):**

<table>
<thead>
<tr>
<th>Date</th>
<th>Vertical Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Jul-10</td>
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</tr>
<tr>
<td>20-Jul-10</td>
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<td>27-Jul-10</td>
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<td>04-Nov-10</td>
<td></td>
</tr>
<tr>
<td>15-Nov-10</td>
<td></td>
</tr>
</tbody>
</table>
AppENDIX 3.1.7.1

MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 96 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s) vs. Vertical Displacement (mm)
SHEAR STRESS RESULTS:

**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 4.5% Binder (100% Pre-Mix)
- **Other:** 95.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 96 hours

**NORMAL STRESS:** 250 kPa

**SHEAR STRESS RESULTS:**

![Shear Stress Graph](image)

**Horizontal Displacement (mm)**

**Shear Stress (KPa)**

![Vertical Displacement Graph](image)

**Time (s)**

**Vertical Displacement (mm)**
**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 4.5% Binder (100% Pre-Mix)
- **Other:** 95.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 96 hours

**NORMAL STRESS:** 400 kPa

**SHEAR STRESS RESULTS:**

![Shear Stress Results Graph]

![Time vs. Vertical Displacement Graph]
SHEAR STRESS RESULTS:

---

**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- **Binder:** 4.5% Binder (100% Pre-Mix)
- **Other:** 95.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 168 hours

**NORMAL STRESS:** No Load

---

**SHEAR STRESS RESULTS:**

1. **22-Jul-10**
   - **Shear Stress (KPa):**
     - Vertical Displacement (mm)
     - Time (s)

2. **12-Jul-10**
   - **Horizontal Displacement (mm):**
     - Vertical Displacement (mm)
     - Time (s)
SHEAR STRESS RESULTS:

[Graph showing shear stress results over time for different dates (15-Jul-10, 22-Jul-10, 01-Aug-10).]

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 168 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa) vs. Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)

Graphs showing shear stress and displacement over time for 15-Jul-10 and 01-Aug-10.
Shear Stress Results:

---

**MINE:** Kidd

**PASTE SOLIDS COMPOSITION:**
- Binder: 4.5% Binder (100% Pre-Mix)
- Other: 95.5% Tailings (55:45 Sand to Gold Tails)

**AGE:** 168 hours

**NORMAL STRESS:** 250 kPa

---

**SHEAR STRESS RESULTS:**

![Shear Stress Graph](image)

- Shear Stress (KPa)
- Horizontal Displacement (mm)
- Time (s)

**Graph Descriptions:**
- Blue line: 15-Jul-10
- Red line: 01-Aug-10

---

660
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 168 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graphs showing shear stress results over time and displacement.](image-url)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 585 hours
NORMAL STRESS: 100 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results with horizontal and vertical displacement over time.](image-url)
MINE: Kidd

PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)

AGE: 585 hours

NORMAL STRESS: 250 kPa

SHEAR STRESS RESULTS:

Shear Stress (KPa)

Horizontal Displacement (mm)

Time (s)

Vertical Displacement (mm)
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings (55:45 Sand to Gold Tails)
AGE: 585 hours
NORMAL STRESS: 400 kPa

SHEAR STRESS RESULTS:

![Graph showing shear stress results for different time periods and displacement measurements.]

14-Dec-10 A
14-Dec-10 B

Shear Stress (KPa)
Horizontal Displacement (mm)
Vertical Displacement (mm)
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE**
  - Binder: 4.5% (100% Pre-Mix)
  - Other: 95.5% (55:45 Sand to Gold Tails)
- **AGE:** 4 hours
- **NORMAL STRESS:** 50 kPa

**CONSOLIDATION RESULTS:**

- **Void Ratio (normalized to 1)**
- **Stress (kPa)**
- **Vertical Displacement (mm)**
- **Time (s)**
CONSOLIDATION RESULTS:

**Kidd**

**Binder:** 4.5% (100% Pre-Mix)

**COMPOSITION:** Other: 95.5% (55:45 Sand to Gold Tails)

**AGE:** 4 hours

**NORMAL STRESS:** 100 kPa

---

**PASTE COMPOSITION:**

<table>
<thead>
<tr>
<th>Stress (kPa)</th>
<th>Void Ratio (normalized to 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7</td>
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</tr>
<tr>
<td>0.75</td>
<td>0.95</td>
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<tr>
<td>0.8</td>
<td>0.9</td>
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<tr>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>0.9</td>
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<tr>
<td>0.95</td>
<td>0.75</td>
</tr>
<tr>
<td>1</td>
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</tbody>
</table>

**Vertical Displacement (mm):**

-6 to 0 mm over time (s)
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**MINE:** Kidd

**PASTE**
- **Binder:** 4.5% (100% Pre-Mix)
- **Other:** 95.5% (55:45 Sand to Gold Tails)

**AGE:** 4 hours

**NORMAL STRESS:** 400 kPa

---

**CONSOLIDATION RESULTS:***

**First Graph:**
- **Title:** Void Ratio (normalized to 1) vs. Stress (kPa)
- **Axes:**
  - Vertical axis: Void Ratio (normalized to 1)
  - Horizontal axis: Stress (kPa)
- **Data Points:**
  - 10-Jun-10, 11-Jun-10, 06-Jul-10

**Second Graph:**
- **Title:** Vertical Displacement (mm) vs. Time (s)
- **Axes:**
  - Vertical axis: Vertical Displacement (mm)
  - Horizontal axis: Time (s)
- **Data Points:**
  - 10-Jun-10, 11-Jun-10, 06-Jul-10
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

![Graph showing void ratio vs. stress](image1)

![Graph showing vertical displacement vs. time](image2)
MINE: Kidd
PASTE Binder: 4.5% (100% Pre-Mix)
COMPOSITION: Other: 95.5% (55:45 Sand to Gold Tails)
AGE: 12 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:

CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binder:** 4.5% (100% Pre-Mix)
- **Other:** 95.5% (55:45 Sand to Gold Tails)

**NORMAL STRESS:** 400 kPa

**AGE:** 12 hours
MINE: Kidd
PASTE Binder: 4.5% (100% Pre-Mix)
COMPOSITION: Other: 95.5% (55:45 Sand to Gold Tails)
AGE: 24 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

[Graphs showing void ratio vs. stress and vertical displacement vs. time for different dates.]
CONSOLIDATION RESULTS:

- Kidd Binder: 4.5% (100% Pre-Mix)
- Other: 95.5% (55:45 Sand to Gold Tails)
- Age: 24 hours
- Normal Stress: 100 kPa

**CONSOLIDATION RESULTS:**

- Void Ratio (normalized to 1)
- Stress (kPa)
- Time (s)

**Graphs:**

- Graph showing void ratio vs. stress for 07-Jul-10 and 20-Oct-10.
- Graph showing vertical displacement vs. time for 07-Jul-10 and 20-Oct-10.
CONSOLIDATION RESULTS:

**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binder:** 4.5% (100% Pre-Mix)
- **Other:** 95.5% (55:45 Sand to Gold Tails)

**AGE:** 24 hours

**NORMAL STRESS:** 250 kPa

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**CONSOLIDATION RESULTS:**

**Graph 1:**
- **Void Ratio (normalized to 1)**
- **Stress (kPa)**
- **Dates:** 07-Jul-10, 09-Jul-10, 14-Jul-10, 21-Jul-10, 20-Oct-10

**Graph 2:**
- **Vertical Displacement (mm)**
- **Time (s)**
- **Dates:** 07-Jul-10, 09-Jul-10, 14-Jul-10, 21-Jul-10
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - **Binder:** 4.5% (100% Pre-Mix)
  - **Other:** 95.5% (55:45 Sand to Gold Tails)
- **AGE:** 24 hours
- **NORMAL STRESS:** 400 kPa

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**CONSOLIDATION RESULTS:***

- **Void Ratio (normalized to 1) vs. Stress (kPa):**
- **Vertical Displacement (mm) vs. Time (s):**
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - Binder: 4.5% (100% Pre-Mix)
  - Other: 95.5% (55:45 Sand to Gold Tails)
- **AGE:** 48 hours
- **NORMAL STRESS:** 100 kPa

**Graphs:**
- **Top Graph:** Void Ratio (normalized to 1) vs. Stress (kPa) for 08-Jul-10.
- **Bottom Graph:** Vertical Displacement (mm) vs. Time (s) for 08-Jul-10.
MINE: Kidd
PASTE COMPOSITION: Binder: 4.5% (100% Pre-Mix)
Other: 95.5% (55:45 Sand to Gold Tails)
AGE: 48 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

![Graph showing void ratio and vertical displacement over time](image)

- **Void Ratio (normalized to 1)**
  - Normalized void ratio decreases over time, indicating consolidation.
  - Various data points are represented for different dates:
    - 11-Jun-10
    - 08-Jul-10
    - 16-Jul-10
    - 23-Jul-10
    - 31-Oct-10

- **Vertical Displacement (mm)**
  - Vertical displacement decreases over time, reflecting consolidation.
  - Similar data points are shown for different dates:
    - 11-Jun-10
    - 08-Jul-10
    - 16-Jul-10
    - 23-Jul-10
    - 31-Oct-10

- **Stress (kPa)**
  - Stress values range from 0 to 1000 kPa.

- **Time (s)**
  - Time range from 0 to 900 seconds.
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE**
  - **Binder:** 4.5% (100% Pre-Mix)
  - **Other:** 95.5% (55:45 Sand to Gold Tails)
- **AGE:** 48 hours
- **NORMAL STRESS:** 400 kPa

![Consolidation Graph](image-url)

**CONSOLIDATION RESULTS**

- **Void Ratio (normalized to 1)**
- **Stress (kPa)**
- **Time (s)**
- **Vertical Displacement (mm)**

*Graphs showing changes in void ratio, stress, time, and vertical displacement over different dates.*
MINE: Kidd
PASTE Composition: Binder: 4.5% (100% Pre-Mix)
COMPOSITION: Other: 95.5% (55.45 Sand to Gold Tails)
AGE: 96 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

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CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

![Void Ratio vs. Stress](image1.png)

![Vertical Displacement vs. Time](image2.png)
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:
CONSOLIDATION RESULTS:

MINE: Kidd
PASTE COMPOSITION: Binder: 4.5% (100% Pre-Mix)
Other: 95.5% (55:45 Sand to Gold Tails)
AGE: 168 hours
NORMAL STRESS: 50 kPa

CONSOLIDATION RESULTS:

- Void Ratio (normalized to 1)
- Stress (kPa)
- Vertical Displacement (mm)

Graphs showing consolidation results over time and stress.
CONSOLIDATION RESULTS:

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - **Binder:** 4.5% (100% Pre-Mix)
  - **Other:** 95.5% (55:45 Sand to Gold Tails)
- **AGE:** 168 hours
- **NORMAL STRESS:** 100 kPa

### CONSOLIDATION RESULTS:

**CONSOLIDATION CURVES:**
- **Void Ratio (normalized to 1) vs. Stress (kPa):**
  - Data points for 01-Aug-10
- **Vertical Displacement (mm) vs. Time (s):**
  - Data points for 01-Aug-10
CONSOLIDATION RESULTS:

**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binder:** 4.5% (100% Pre-Mix)
- **Other:** 95.5% (55:45 Sand to Gold Tails)

**AGE:** 168 hours

**NORMAL STRESS:** 250 kPa
CONSOLIDATION RESULTS:

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**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binder:** 4.5% (100% Pre-Mix)
- **Other:** 95.5% (55:45 Sand to Gold Tails)

**AGE:** 168

**NORMAL STRESS:** 400 kPa

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**CONSOLIDATION RESULTS:**

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**Void Ratio (normalized to 1)**

**Stress (kPa):**
- 0.94
- 0.95
- 0.96
- 0.97
- 0.98
- 0.99

**Time (s):**
- 15-Jul-10
- 22-Jul-10
- 01-Aug-10

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**Vertical Displacement (mm):**

**Time (s):**
- 15-Jul-10
- 22-Jul-10
- 01-Aug-10
CONSOLIDATION RESULTS:

**MINE:** Kidd

**PASTE COMPOSITION:**
- **Binder:** 4.5% (100% Pre-Mix)
- **Other:** 95.5% (55:45 Sand to Gold Tails)

**AGE:** 585 hours

**NORMAL STRESS:** 100 kPa

![Diagram 1](image1)

![Diagram 2](image2)
MINE: Kidd
PASTE
COMPOSITION:
Binder: 4.5% (100% Pre-Mix)
Other: 95.5% (55:45 Sand to Gold Tails)

AGE: 585 hours
NORMAL STRESS: 250 kPa

CONSOLIDATION RESULTS:

![Graph 1: Void Ratio vs. Stress](image1)

![Graph 2: Vertical Displacement vs. Time](image2)
CONSOLIDATION RESULTS:

**CONSOLIDATION RESULTS:**

- **MINE:** Kidd
- **PASTE COMPOSITION:**
  - **Binder:** 4.5% (100% Pre-Mix)
  - **Other:** 95.5% (55:45 Sand to Gold Tails)
- **AGE:** 585 hours
- **NORMAL STRESS:** 400 kPa

**CONSOLIDATION RESULTS:**

- **Stress (kPa):**
  - 0.988
  - 0.99
  - 0.992
  - 0.994
  - 0.996
  - 0.998

- **Void Ratio (normalized to 1):**
  - -0.35
  - -0.3
  - -0.25
  - -0.2
  - -0.15
  - -0.1
  - -0.05
  - 0

- **Vertical Displacement (mm):**
  - 0
  - 0.05
  - 0.1
  - 0.15
  - 0.2
  - 0.25
  - 0.3
  - 0.35
KiddBinder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings
4 hours

APPENDIX 3.1.7.

MINE: Kidd
PASTE SOLIDS COMPOSITION: Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings
AGE: 4 hours

Peak

\[ y = 0.7627x + 10.386 \]
\[ R^2 = 0.9962 \]

Residual

\[ y = 0.7197x + 6.4299 \]
\[ R^2 = 0.9954 \]
PASTE SOLIDS COMPOSITION:
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings

AGE: 12 hours

\[ y = 0.7074x + 14.339 \]
\[ R^2 = 0.999 \]

\[ y = 0.6303x + 13.645 \]
\[ R^2 = 0.9995 \]
PASTE SOLIDS COMPOSITION:
- Binder: 4.5% Binder (100% Pre-Mix)
- Other: 95.5% Tailings

AGE: 24 hours

**Peak**

\[ y = 0.8064x + 22.84 \]
\[ R^2 = 0.9853 \]

**Residual**

\[ y = 0.7524x + 15.09 \]
\[ R^2 = 0.9913 \]
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings

48 hours

MINE: APPENDIX 3.1.7.

PASTE SOLIDS COMPOSITION:

AGE:

\[ y = 0.7327x + 103.77 \]
\[ R^2 = 0.9741 \]

\[ y = 0.6937x + 59.99 \]
\[ R^2 = 0.9221 \]
Kidd Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings

96 hours

PASTE SOLIDS COMPOSITION:

AGE: 96 hours

\[ y = 0.3988x + 305.34 \]
\[ R^2 = 0.7324 \]

\[ y = 0.7232x + 86.393 \]
\[ R^2 = 0.8002 \]
Kidd
Binder: 4.5% Binder (100% Pre-Mix)
Other: 95.5% Tailings
585 hours

MINE: APPENDIX 3.1.7.3

PASTE SOLIDS COMPOSITION:

AGE: 

\[ y = 0.5418x + 789.73 \]
\[ R^2 = 0.4912 \]

\[ y = 0.8315x + 135.94 \]
\[ R^2 = 0.9449 \]