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Knight Piésold
CONSULTING

Our Reference: VA101-1/18-A.01
Continuity Nbr.: VA07-01853

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December 19, 2007

Mr. Chris Carr
Geotechnical Mines Inspector
Ministry of Energy, Mines and Petroleum Resources
4th Floor, 1810 Blanshard Street
Victoria, BC V8W 9N3

Dear Chris,

Re: Mount Polley Stage 6 TSF Design

This letter is in response to comments by Mr. Chris Carr who has requested the following information before proceeding with the permit conditions for the Stage 6 embankment raise for the Tailings Storage Facility at Mount Polley Mine. Mr. Carr's comments and responses from Knight Piésold are as follows:

Provide the results of direct shear testing on lacustrine soils, if these tests have been completed.

Two brass tube samples of the lacustrine unit were collected on May 13, 2007. The samples were collected at a depth of approximately 2.5 to 3.0 meters in a testpit excavated downstream of the Main Embankment adjacent to the Main Embankment Seepage Collection Pond. The samples were sent to the Knight Piésold lab for direct shear testing at normal stresses of 400, 800 and 1600 kPa. The lab results are included in Appendix A. The resulting friction angles for the samples ranged from 21 to 25 degrees, with an average value of 23 degrees. The shear strength did not decrease significantly following the peak strength, and the average residual friction angle at 20% strain was 22 degrees.

It is recognised that it is sometimes difficult to determine the lower bound shear strength parameters for a layered lacustrine deposit, and it is possible that the current lab results may not represent the weakest plane within the entire lacustrine unit. Therefore, Knight Piésold has adopted a conservative design philosophy and has incorporated an additional stabilizing buttress in the Main Embankment design to provide for an additional contingency measure for further enhancing the stability. The elevation of the buttress will be progressively increased from Stage 6 through closure in order to ensure that a suitable factor of safety is provided, even for very conservative shear strength parameters.

Provide cross-sections showing stability analyses for dam raise to elevation 958 m.

The cross-section used for the stability analysis for the Main Embankment is shown on Figure 1. The cross-section includes the following:

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- The embankment crest was modelled with an embankment elevation of 958 m,
- The downstream buttress was modelled at an elevation of 925 m. The current elevation of the downstream buttress is 917 m. The Stage 6 construction program involves raising the elevation of the buttress to elevation 925 m to ensure that the required Factor of Safety is achieved for the Stage 6 embankment configuration.
- The lacustrine unit at the Main Embankment was modelled with a thickness of 12 m. A study comparing the drained residual strength to the clay content, liquid limit, and effective normal stress was completed by Stark and Eid (1995). The results of the study indicate that the drained residual strength of a material with a clay content ranging from 25 to 50%, with a liquid of 40%, and an effective normal stress of 700 kPa is in the order of 24 degrees. A conservative friction angle of 24 degrees was applied for the lacustrine unit. Subsequent direct shear tests conducted by Knight Piésold also indicate that the peak friction angle of the lacustrine unit is in the range of 21 to 25 degrees, (average of 23 degrees). The average residual friction angle at 20% strain was 22 degrees.
- The stability analysis was completed with the elevated pore pressures in the lacustrine unit (approximately 2.5m above ground) as the piezometers installed in the lacustrine material indicate slight artesian conditions within this material.

The results of the stability analyses indicate that the factor of safety for the Stage 6 TSF Main Embankment for static conditions was approximately 1.48 for a lacustrine friction angle of 24 degrees. A sensitivity stability analysis was also completed using different friction angles for the lacustrine unit. The results of the sensitivity stability analysis are shown on Figure 2. The factor of safety was approximately 1.44 for a friction angle of 23 degrees, the average friction angle from the direct shear tests on the lacustrine unit. The factor of safety for the lower end direct shear test friction angle of 21 degrees was approximately 1.35. The sensitivity analysis also demonstrates that the embankment would remain stable with a factor of safety greater than 1.1 for an extreme lower bound residual friction angle of 15 degrees for the lacustrine unit.

Stability analyses were also completed using conservative residual undrained shear strength, (Su/p') values to calculate the factor of safety for undrained conditions in the lacustrine unit under large strain conditions. The analyses were completed using typical tau/sigma values for soft clayey materials in the order of 0.25 to 0.3. The factor of safety for the Stage 6 configuration was approximately 1.1 for a tau/sigma value of 0.25, indicating that there is also sufficient undrained strength in the lacustrine unit for the embankment to remain stable.

Provide slope inclinometer depth vs. cumulative displacement plots showing cumulative displacement from date of installation.

Three new slope inclinometers were installed downstream of the toe of the Main Embankment during the Stage 4 construction program. One of the inclinometers installed in 2001 (SI01-01) was damaged during the placement of the shell zone material and is no longer functioning. The last reading for SI01-01 was March 2006. There are four functioning inclinometers installed at the Main Embankment.

The results of the inclinometer readings indicate that there have not been any significant deviations measured in the inclinometers since their installation. There were no measurable deformations recorded in the inclinometers during or after the Stage 5 construction program. The results of the readings for inclinometers are shown on Figures 3 to 7.

Yours sincerely,

KNIGHT PIESOLD LTD.

PROFESSIONAL PROVINCE OF L.J. GALBRAITH 25493 BRITISH COLUMBIA ENGINEER

Dec 21/07

Les Galbraith, P.Eng.
Senior Engineer

for Ken Brouwer, P.Eng.
Managing Director

Attachments:
Figure 1 Rev 0 – Main Embankment Stability Section
Figure 2 Rev 0 – Lacustrine Unit Sensitivity Analyses
Figure 3 Rev 0 – Inclinometer SI 01-01 – Displacement Vs. Depth
Figure 4 Rev 0 – Inclinometer SI 01-02 – Displacement Vs. Depth
Figure 5 Rev 0 – Inclinometer SI 06-01 – Displacement Vs. Depth
Figure 6 Rev 0 – Inclinometer SI 06-02 – Displacement Vs. Depth
Figure 7 Rev 0 – Inclinometer SI 06-03 – Displacement Vs. Depth
Appendix A – Direct Shear Testing Results

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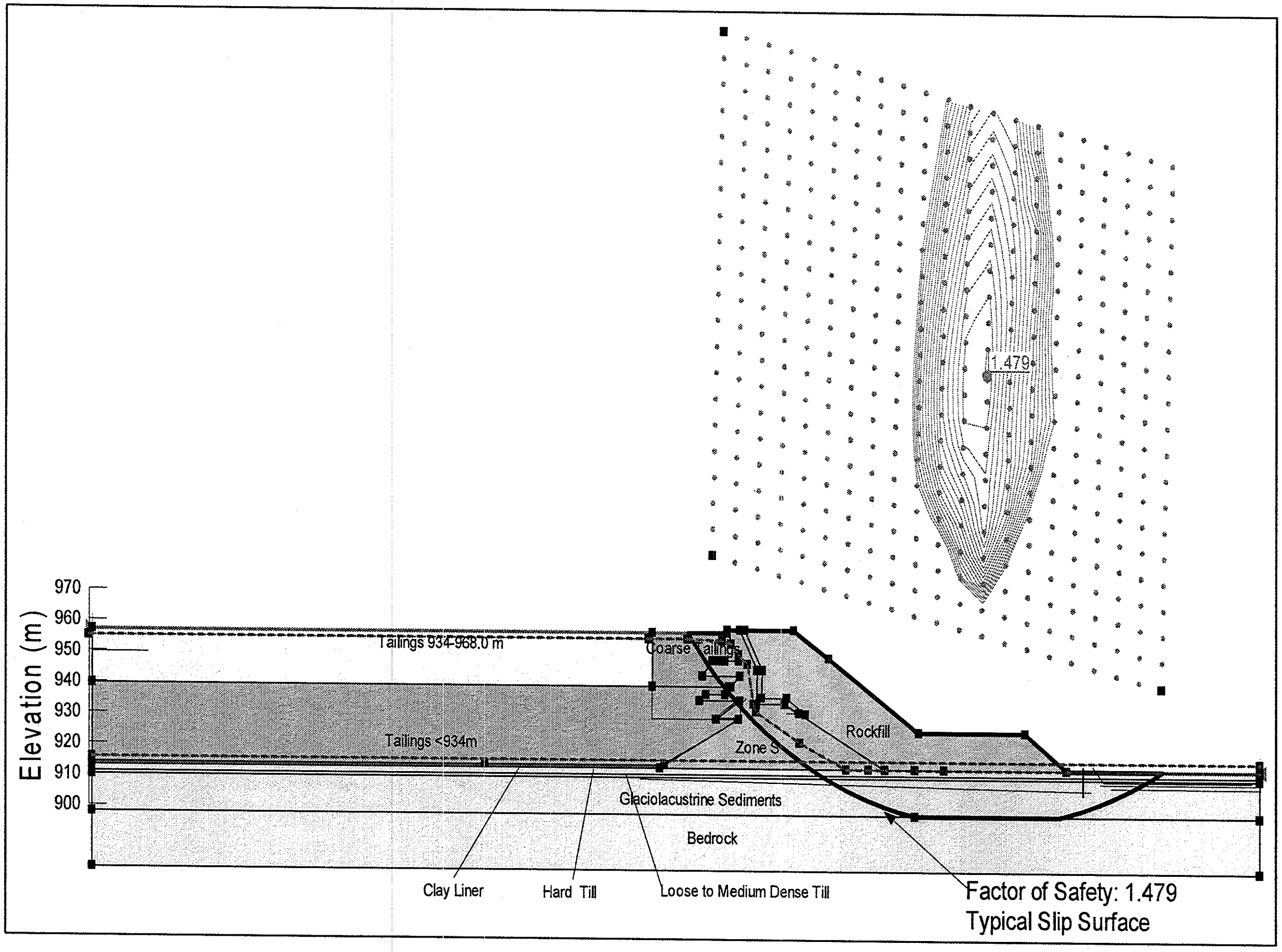
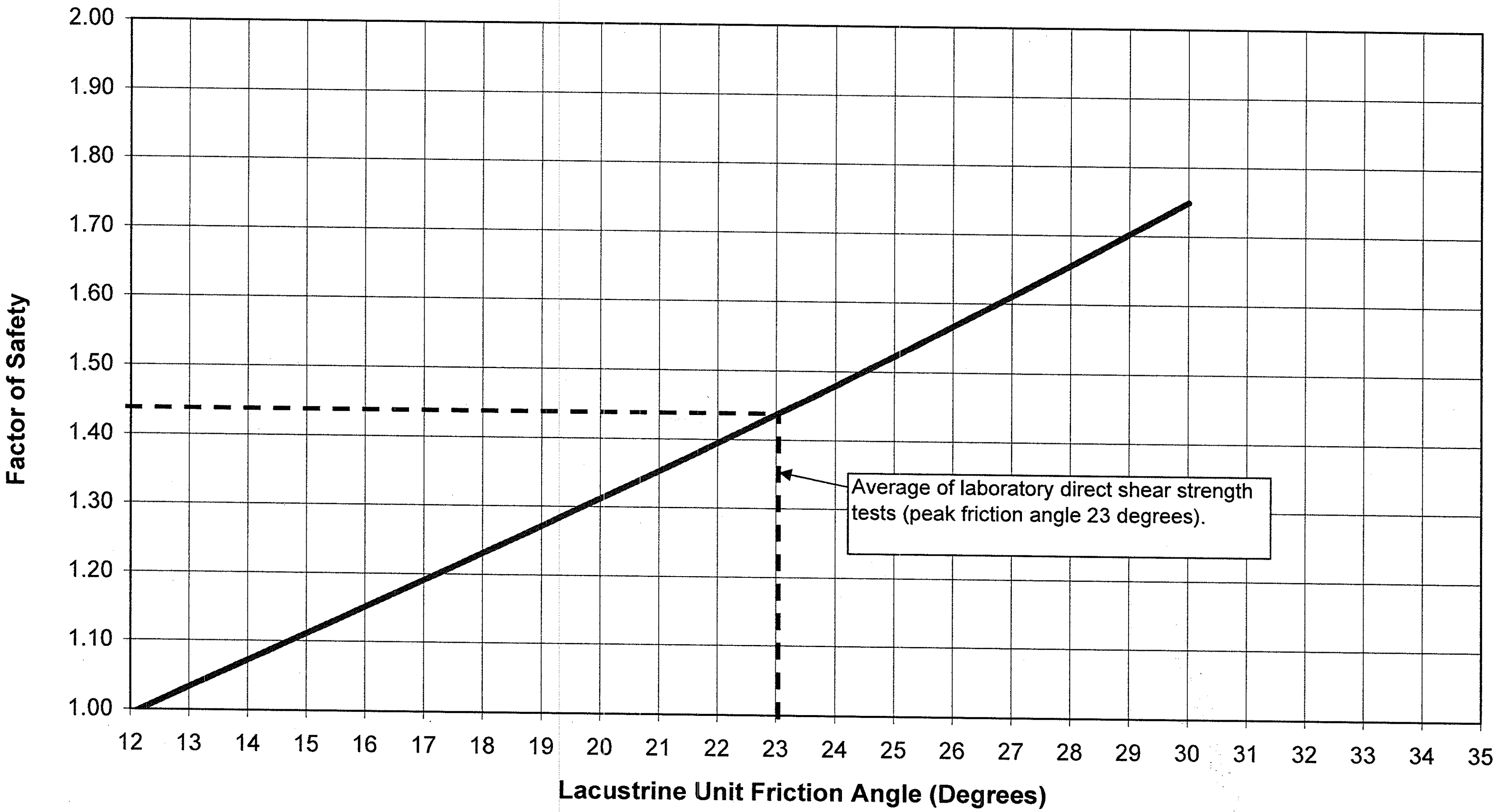


MOUNT POLLEY MINING CORPORATION	
MOUNT POLLEY MINE	
TAILINGS STORAGE FACILITY MAIN EMBANKMENT STABILITY SECTION	
Knight Piésold CONSULTING	PROJECT / ASSIGNMENT NO. VA 101-1/18
	REF NO. VA07-01853
	FIGURE 1
	REV. 0

Rev 0 - Issued for Stage 6 Permitting



MOUNT POLLEY MINING CORPORATION	
MOUNT POLLEY MINE	
TAILINGS STORAGE FACILITY **LACUSTRINE UNIT SENSITIVITY ANALYSES**	
Knight Piésold CONSULTING	PROJECT / ASSIGNMENT NO. VA 101-1/18; REF NO. VA07-01853
	FIGURE 2; REV. 0

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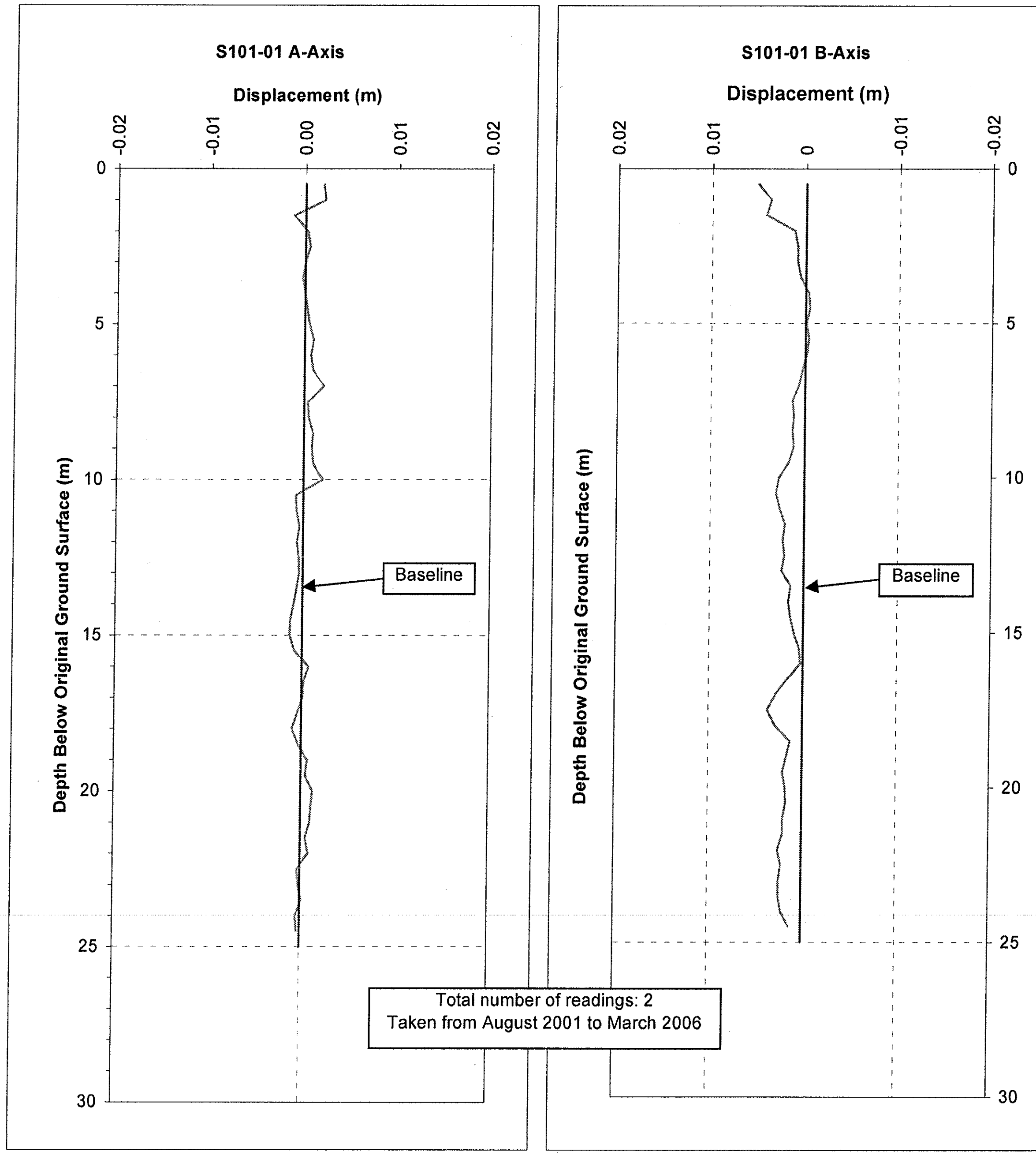

Notes:

1.) Displacement is relative to the baseline reading taking in August 2001.

2.) SI01-01 damaged furing Stage 4 construction and is no longer functioning

MOUNT POLLEY MINING CORPORATION		
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TAILINGS STORAGE FACILITY INCLINOMETER SI01-01 DISPLACEMENT VS. DEPTH		
Knight Piésold CONSULTING	PROJECT / ASSIGNMENT NO. VA101-1/18	REF NO. VA07-01853
	FIGURE 3	REV. 0

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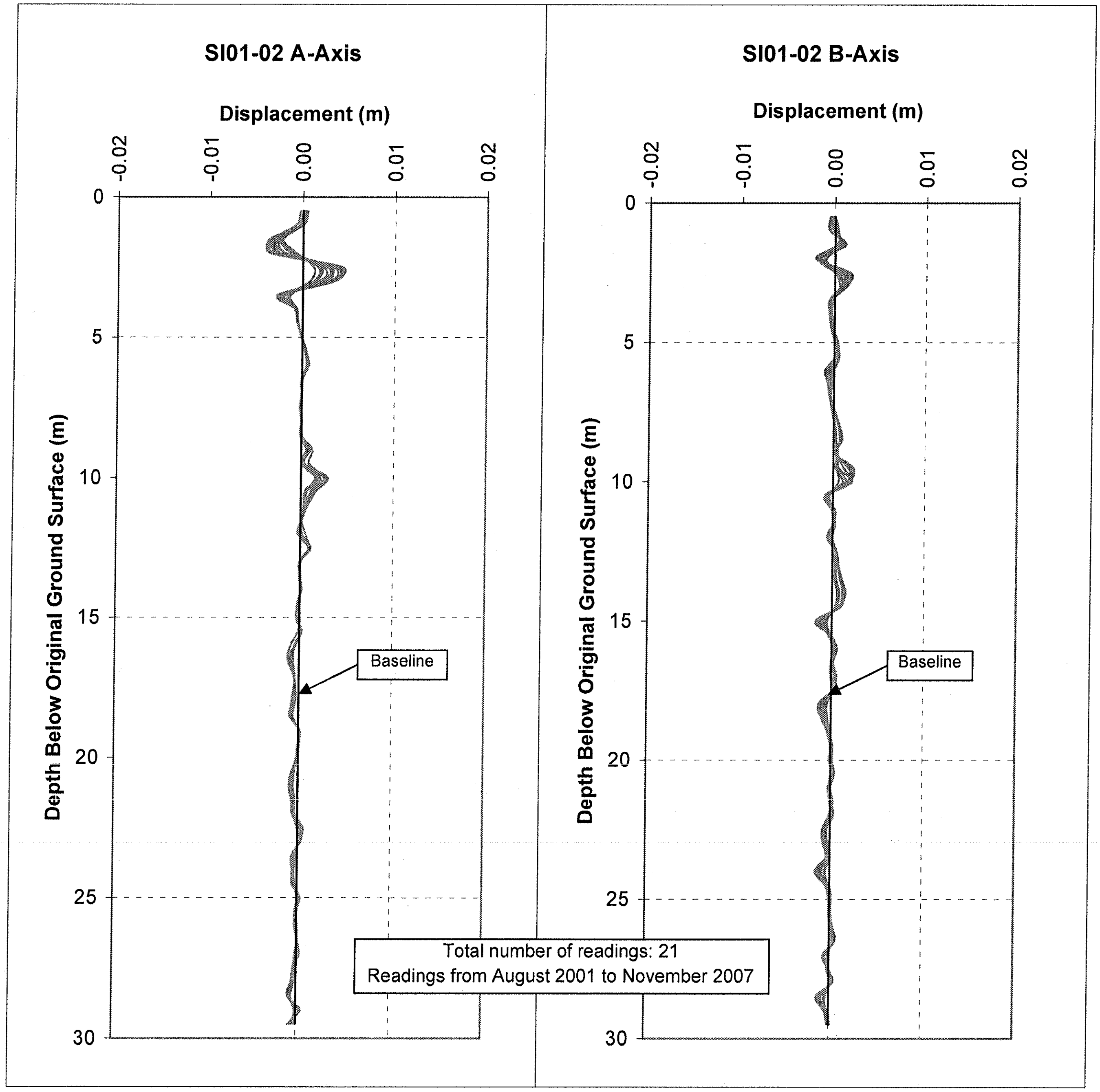

Notes:

1) Displacement is calculated relative to the initial data set, recorded in August 2001.

MOUNT POLLEY MINING CORPORATION
MOUNT POLLEY MINE
TAILINGS STORAGE FACILITY INCLINOMETER SI01-02 DISPLACEMENT VS. DEPTH

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	FIGURE 4	REV. 0

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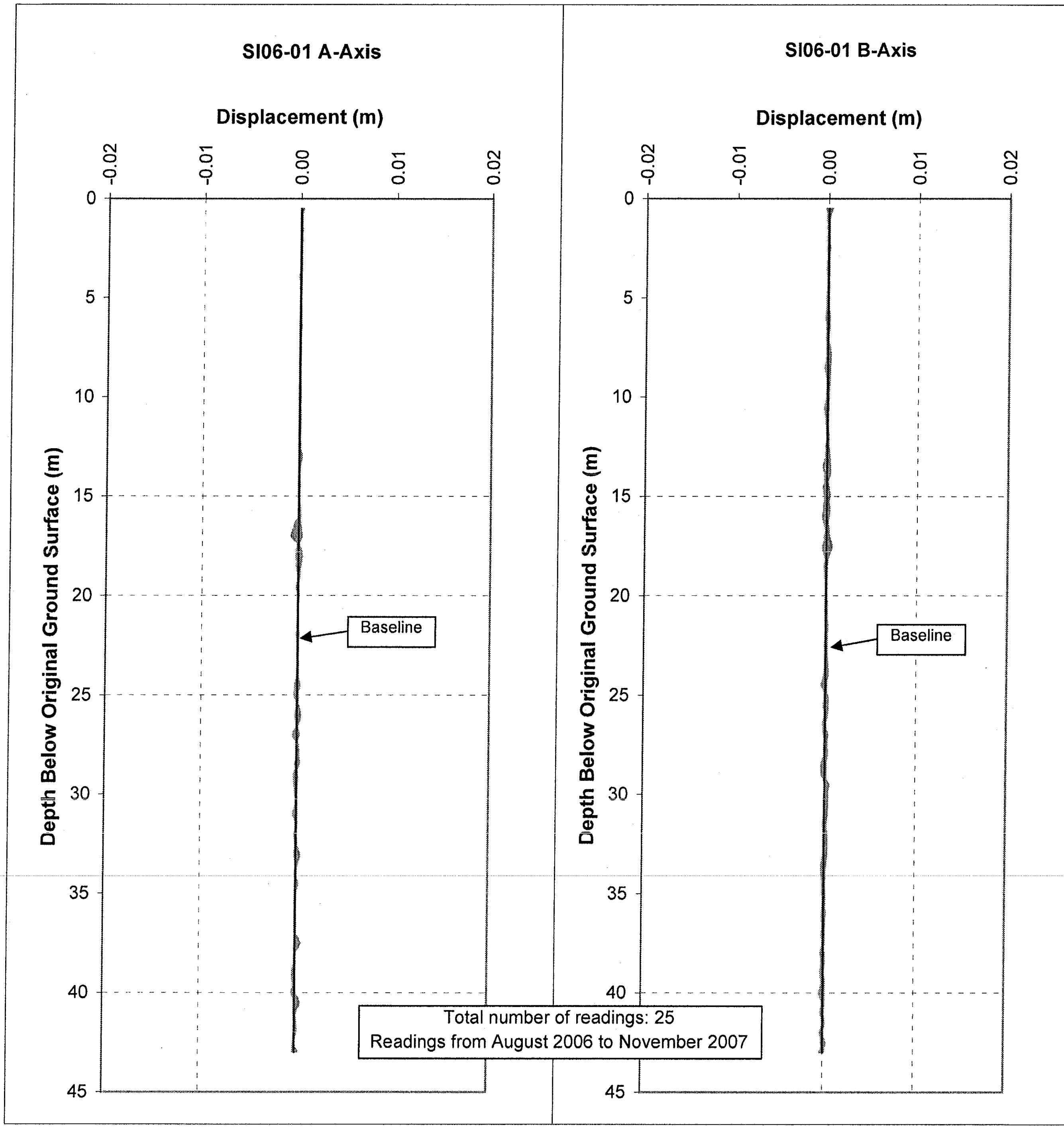

Notes:
1) Displacement is calculated relative to the initial data set, recorded in August 2006.

MOUNT POLLEY MINING CORPORATION		
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TAILINGS STORAGE FACILITY INCLINOMETER SI06-01 DISPLACEMENT VS. DEPTH		
Knight Piésold CONSULTING	PROJECT / ASSIGNMENT NO. VA101-1/18	REF NO. VA07-01853
	FIGURE 5	REV. 0

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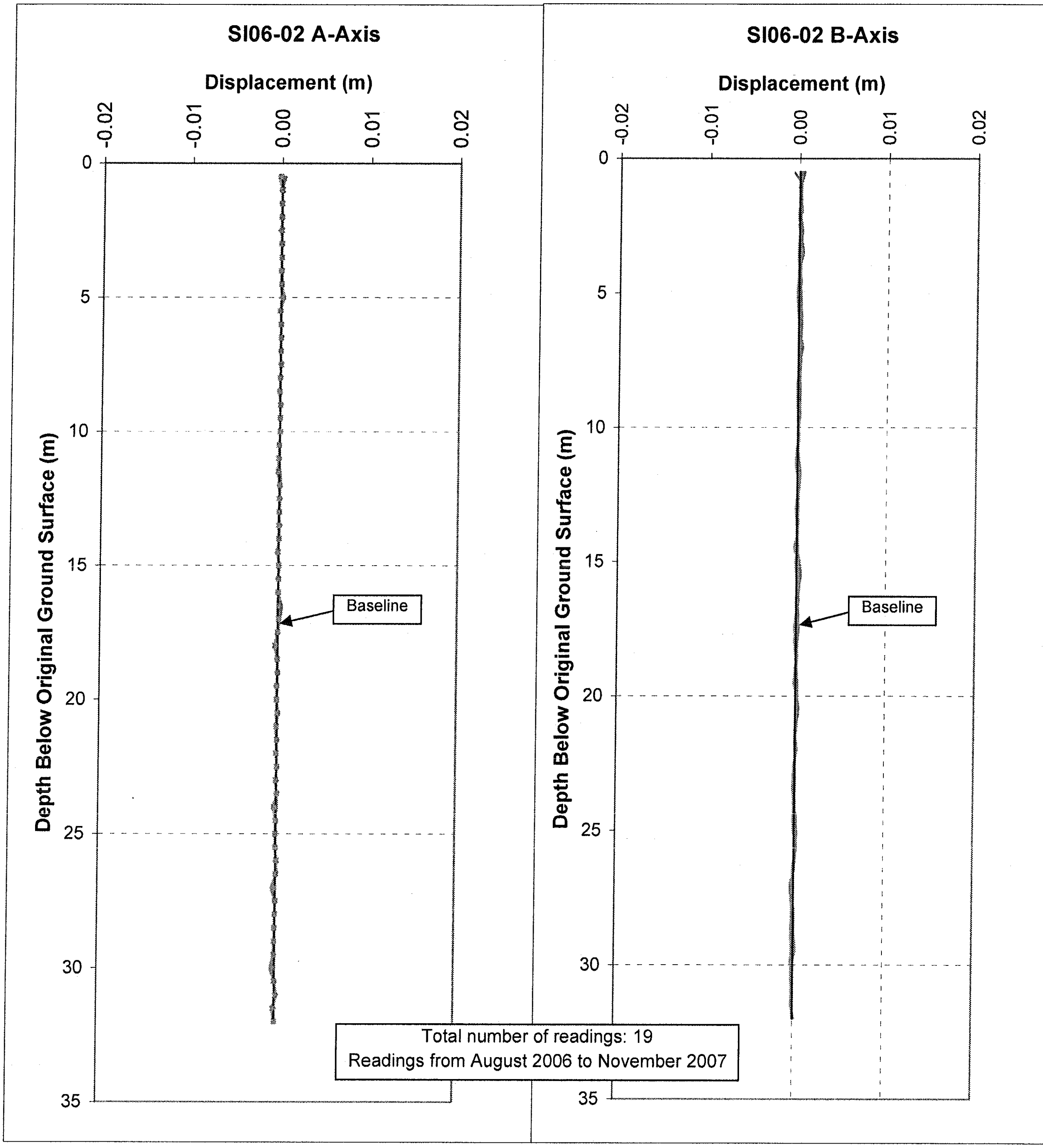

Notes:
1) Displacement is calculated relative to the initial data set, recorded in August 2006.
2.) SI06-02 was was blocked by ice burinf the winter 06 06/07, therefore, no data was recorded.

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TAILINGS STORAGE FACILITY INCLINOMETER SI06-02 DISPLACEMENT VS. DEPTH		
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	FIGURE 6	REV. 0

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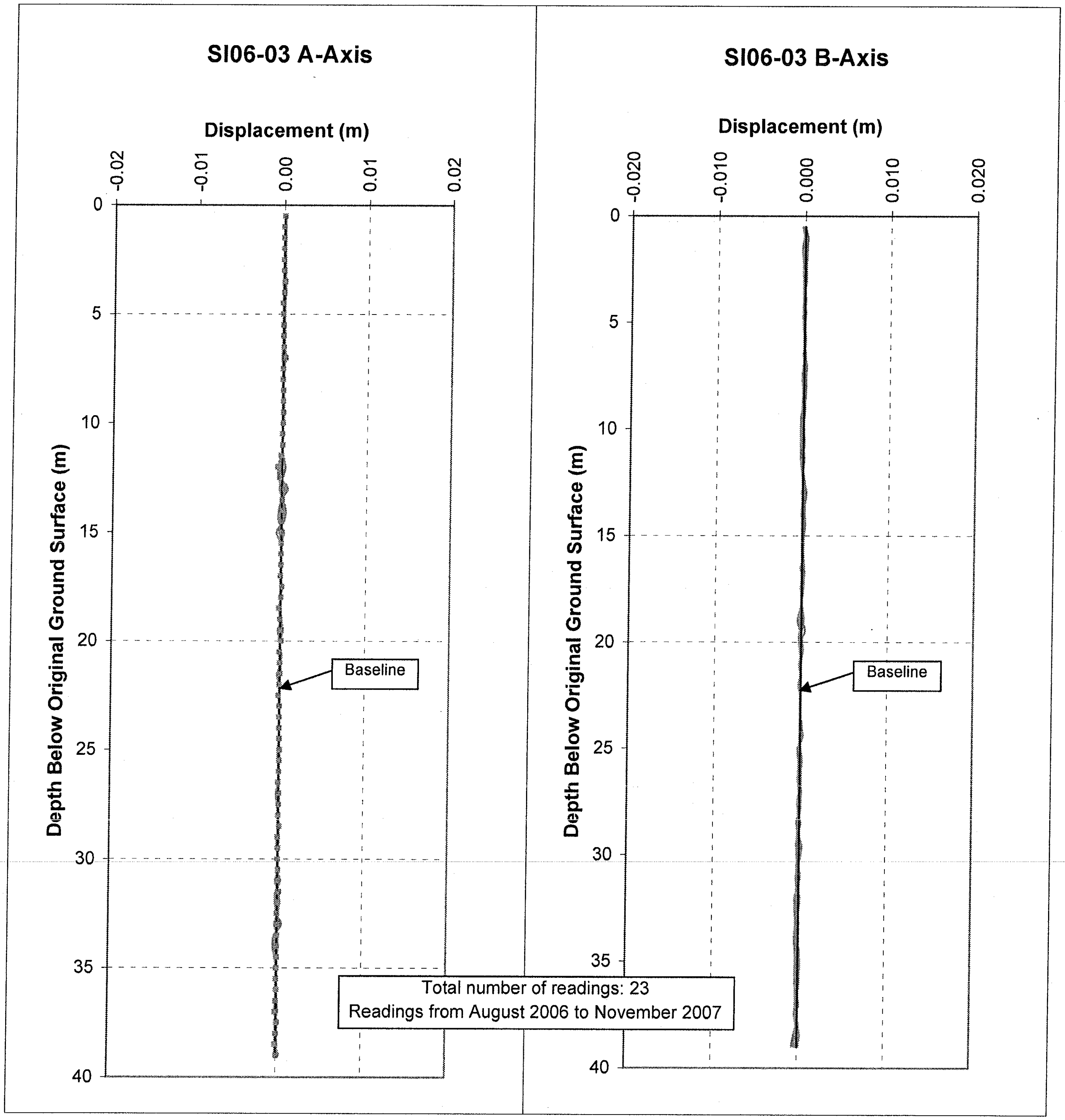

Notes:
1) Displacement is calculated relative to the initial data set, recorded in August 2006.

MOUNT POLLEY MINING CORPORATION		
MOUNT POLLEY MINE		
TAILINGS STORAGE FACILITY INCLINOMETER SI06-03 DISPLACEMENT VS. DEPTH		
Knight Piésold CONSULTING	PROJECT / ASSIGNMENT NO. VA101-1/18	REF NO. VA07-01853
	FIGURE 7	REV. 0

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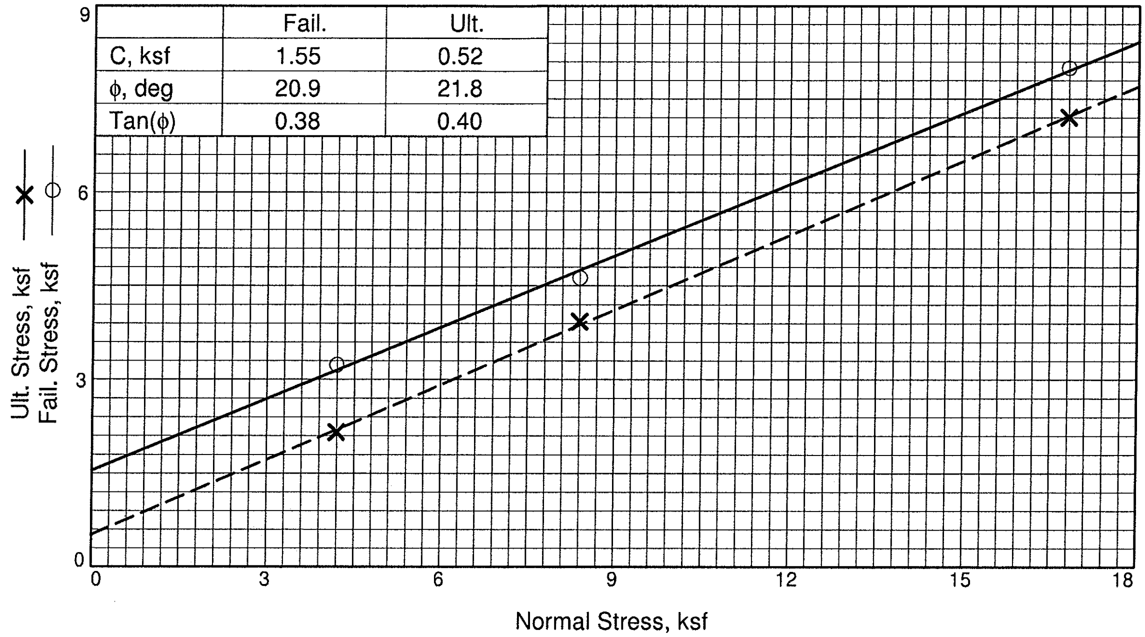
APPENDIX A

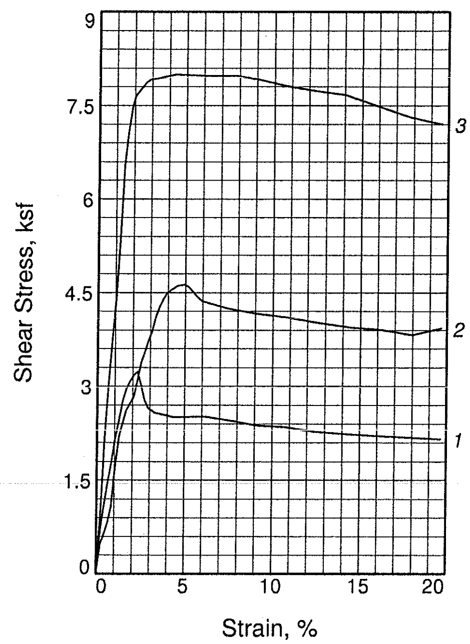
DIRECT SHEAR TESTING RESULTS

(10 Pages)

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.



	Fail.	Ult.
C, ksf	1.55	0.52
ϕ, deg	20.9	21.8
Tan(ϕ)	0.38	0.40



Sample No.		1	2	3
Initial	Water Content, %	20.9	20.9	20.9
	Dry Density, pcf	106.9	105.3	104.7
	Saturation, %	92.3	88.8	87.6
	Void Ratio	0.6351	0.6598	0.6694
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.10
At Test	Water Content, %	18.4	14.0	20.8
	Dry Density, pcf	109.5	109.6	110.5
	Saturation, %	86.2	65.7	100.0
	Void Ratio	0.5958	0.5951	0.5814
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.98	0.96	1.04
Normal Stress, ksf		4.20	8.40	16.80
Fail. Stress, ksf		3.23	4.63	8.00
Strain, %		2.3	5.0	4.3
Ult. Stress, ksf		2.16	3.93	7.21
Strain, %		19.7	19.7	19.6
Strain rate, %/min.		0.08	0.08	0.08

Sample Type: Liner

Description:

Assumed Specific Gravity= 2.8

Remarks: Failure tangents drawn at peak shear stress and approximately 20% strain. Specimens were not inundated.

Fig. ________

Client: Knight Piésold Ltd.

Project: Mt. Polley

Location: TP-07

Sample Number: 03-1

Proj. No.: DV108-77.8 **Date Sampled:** 7/2/07

Knight Piésold CONSULTING

Tested By: jdb **Checked By:** spb

DIRECT SHEAR TEST

7/9/2007

Date: 7/2/07
Client: Knight Piésold Ltd.
Project: Mt. Polley
Project No.: DV108-77.8
Location: TP-07
Sample Number: 03-1
Description:
Remarks: Failure tangents drawn at peak shear stress and approximately 20% strain. Specimens were not inundated.
Type of Sample: Liner
Assumed Specific Gravity=2.8 **LL=** **PL=** **PI=**

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	411.920		261.250
Moisture content: Dry soil+tare, gms.	360.290		238.380
Moisture content: Tare, gms.	113.640		113.750
Moisture, %	20.9	18.4	18.4
Moist specimen weight, gms.	155.6		
Diameter, in.	2.42	2.42	
Area, in.^{2}	4.58	4.58	
Height, in.	1.00	0.98	
Net decrease in height, in.		0.02	
Wet Density, pcf	129.3	129.6	
Dry density, pcf	106.9	109.5	
Void ratio	0.6351	0.5958	
Saturation, %	92.3	86.2	

Test Readings for Specimen No. 1

Load ring constant = 31.4108 lbs. per input unit
Normal stress = 4.2 ksf
Strain rate, %/min. = 0.08
Fail. Stress = 3.23 ksf **at reading no.** 11
Ult. Stress = 2.16 ksf **at reading no.** 25

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.0000	0.0	0.0	0.00
1	0.0050	0.7163	22.5	0.2	0.71
2	0.0100	1.1302	35.5	0.4	1.12
3	0.0150	1.4868	46.7	0.6	1.47
4	0.0200	1.8051	56.7	0.8	1.78
5	0.0250	2.1808	68.5	1.0	2.15
6	0.0300	2.4991	78.5	1.2	2.47
7	0.0350	2.8080	88.2	1.4	2.77
8	0.0400	2.9958	94.1	1.7	2.96
9	0.0450	3.1295	98.3	1.9	3.09
10	0.0500	3.2250	101.3	2.1	3.18
11	0.0550	3.2759	102.9	2.3	3.23