

**Laboratory No. M11-555**

## NATT

Topic: Chemical Analysis

Attention: Don Sanderson, Andy Golakovich

August 17, 2011

### Sample Identification:

- 1) McKay Sweep, Treated, approx. 2000 acres
- 2) McKay Sweep, Untreated, approx. 500 acres
- 3) J.D. Sweep, Treated, approx. 500 acres
- 4) J.D. Sweep, Untreated, approx. 500 acres
- 5) J.D. Sweep, NEW, N238333

Purchase Order Number: MRO-003126

Tested in Accordance With: ASTM E1479-99 and E1019-08

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Test Report Certified By:

Reviewed By:

*Ning Peng, B. Sc.*  
Senior Metallurgist

Approved By:

*Pat Misale, P. Eng.*  
Department Manager

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Please see Tables 1 and 2 below for chemical analysis results, and figures 1 to 3 for photographs of the samples.

Treated Sweep last's for  
2000 acres

### Chemical Analysis Results

Table 1

	1) McKay Sweep, Treated, approx. 2000 acres Contents, %	2) McKay Sweep, Untreated, approx. 500 acres Contents, %
Carbon	0.346	0.332
Manganese	1.28	1.29
Phosphorus	<0.005	0.009
Sulphur	0.001	0.002
Silicon	0.31	0.28
Copper	0.30	0.20
Nickel	0.11	0.14
Chromium	0.14	0.15
Vanadium	<0.01	<0.01
Molybdenum	0.03	0.05
Aluminum	0.06	0.06
Cobalt	<0.01	0.01
Titanium	0.03	0.02
Lead	<0.01	<0.01

Notice the extreme effect that  
Thermal cycling has on Nickle.

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### Chemical Analysis Results, Cont'd

Table 2

	3) J.D. Sweep, Treated, approx. 500 acres Contents, %	4) J.D. Sweep, Untreated, approx. 500 acres Contents, %	5) J.D. Sweep, NEW, N238333 Contents, %
Carbon	0.322	0.382	0.369
Manganese	1.15	1.16	1.18
Phosphorus	0.012	0.011	0.011
Sulphur	0.003	0.004	0.003
Silicon	0.25	0.25	0.24
Copper	0.04	0.04	0.01
Nickel	0.03	0.03	0.02
Chromium	0.23	0.24	0.21
Vanadium	<0.01	<0.01	<0.01
Molybdenum	<0.01	<0.01	<0.01
Aluminum	0.03	0.03	0.03
Cobalt	<0.01	0.01	<0.01
Titanium	0.04	0.04	0.04
Lead	<0.01	<0.01	<0.01

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**Figure 1**  
Left to right:  
samples 1 and 2



**Figure 2**  
Left to right:  
samples 4 and 3



**Figure 3**  
Sample 5