



# Nagrom Metallurgical Report

*Red River Resources*

***Nagrom Test Batch: T144***

***Title: Magnetite, Hematite, Goethite and Tin Investigation***

***March 05 2009***

A.C.N. 008 868 335  
A.B.N. 55 008 868 335

T: 08 9399 3934  
F: 08 9497 1415

PO Box 66  
Kelmscott WA 6991

49 Owen Road,  
Kelmscott WA 6111



MAGNETITE



GOETHITE

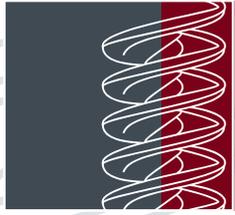


HEMATITE



CASSITERITE

***Mineral Processing - Metallurgical Testing - Circuitry Design - Equipment Supply***



**NAGROM**  
the mineral processors

A.C.N. 008 868 335  
A.B.N. 55 008 868 335

T: 08 9399 3934  
F: 08 9497 1415

PO Box 66  
Kelmscott WA 6991

49 Owen Road,  
Kelmscott WA 6111

## Nagrom Capabilities

### Metallurgical Testing and Mineral Beneficiation (Laboratory to Pilot scale)

- Crushing and grinding - jaw and rolls crushing, rod and ball milling
- Custom drying
- Size separation
- Gravity separation- Spiral, Tables, Jigs and Hydrosizer
- Dense Media cyclone and Cone
- Full transmission x-ray ore sorting
- Magnetic Separation
- Electrostatic Separation
- Flotation Separation
- Gold Recovery and Leaching Program

### Mineral Process Plant -Design, Fabrication and Operation

Nagrom has in-house fabrication ability to assist with:

- Process circuit design, construction, deployment and operation.
- Custom mineral processing to specifications
- Sourcing, supplying and commissioning specified equipment
- Facilitate superintended export of blended final product

### Mine site Services - Contract Staffing

- On site processing/consulting
- Short/Long term coverage of contract staff

### Equipment Hire

- A range of Pilot scale equipment available for hire

*Mineral Processing - Metallurgical Testing - Circuitry Design - Equipment Supply*

# Nagrom Statement of Certification

## Sample Preparation and Analysis:

The testwork is conducted by experienced personnel at Nagrom's Kelmscott metallurgical laboratory under the supervision of a senior metallurgist.

Process solids are assayed at Ultratrace Laboratories using fused bead/XRF methods where applicable otherwise acid/fusion dilution followed by ICP-MS methods are used.

Process solutions are assayed at Ultratrace Laboratories using ICP-MS techniques.

The reports will be signed on behalf of the General Manager and Executive Director of Nagrom (the Mineral Processors).

Dr Glen P. O'Malley

For further information, contact:  
Glen O'Malley, Senior Metallurgist  
Telephone: +61 8 9399 3934  
Mobile: 0439 900 455

Information in the report relating to the metallurgical interpretation, analysis, mineral distribution and recommendations has been compiled and checked by the Senior Metallurgist of Nagrom. Dr Glen O'Malley has sufficient experience and expertise relevant to this type of test-work through his job experiences and education and he qualifies as a competent person in the field of metallurgy.

The Nagrom team including Glen O'Malley, Rick Murphy and Tony Wilkinson has a wide range of metallurgical experiences in comminution, gravity separation, flotation, leaching, SX, IX, precipitation, and settling from bench testing scale through to pilot plant scale for the development of flow-sheets or for solving process problems.

*Mineral Processing - Metallurgical Testing - Circuitry Design - Equipment Supply*



SAMPLE	Weight g	Fe %	Sn %	SiO <sub>2</sub> %	P %	S %	LOI %	Department					
								Mass	Fe	Sn	SiO <sub>2</sub>	P	S
<b>Sample 1</b>													
LIMS Sizings													
Calc. Feed	376.0	67.16	0.023	1.82	0.002	0.003	-1.81	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%
+180µm	66.6	68.06	0.021	1.33	0.002	0.002	-1.87	17.7%	17.95%	16.50%	12.97%	15.79%	12.73%
+125µm	71.2	67.62	0.022	1.55	0.002	0.002	-1.82	18.9%	19.07%	18.48%	16.16%	16.88%	13.61%
+75µm	84.2	67.01	0.023	1.69	0.002	0.003	-1.70	22.4%	22.34%	22.85%	20.83%	19.96%	24.14%
+53µm	62.2	66.83	0.024	2.09	0.002	0.003	-1.81	16.5%	16.46%	17.62%	19.03%	14.74%	17.83%
+45µm	41.1	66.77	0.021	2.09	0.003	0.003	-1.96	10.9%	10.87%	10.18%	12.58%	14.61%	11.78%
+38µm	32.0	66.32	0.024	2.49	0.003	0.003	-1.82	8.5%	8.40%	9.06%	11.67%	11.38%	9.18%
-38µm	18.7	66.22	0.024	2.47	0.003	0.006	-1.77	5.0%	4.90%	5.30%	6.76%	6.65%	10.72%
<b>Sample 1</b>													
Saliant Pole Sizings													
Calc. Feed	167.5	67.33	0.023	1.48	0.003	0.003	-1.22	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%
+180µm	23.0	66.57	0.023	1.87	0.003	0.003	-0.53	13.7%	13.58%	13.75%	17.35%	16.25%	12.34%
+125µm	30.4	66.44	0.023	1.88	0.003	0.004	-0.74	18.1%	17.91%	18.18%	23.05%	21.48%	21.74%
+75µm	33.3	67.08	0.022	1.49	0.002	0.003	-1.09	19.9%	19.81%	19.04%	20.01%	15.69%	17.86%
+53µm	29.2	67.34	0.028	1.72	0.002	0.003	-1.45	17.4%	17.43%	21.25%	20.26%	13.75%	15.66%
+45µm	15.4	68.20	0.022	1.03	0.002	0.004	-1.92	9.2%	9.31%	8.81%	6.40%	7.25%	11.01%
+38µm	30.7	68.43	0.020	0.86	0.003	0.003	-1.67	18.3%	18.63%	15.96%	10.65%	21.69%	16.47%
-38µm	5.5	68.37	0.021	1.03	0.003	0.005	-1.71	3.3%	3.33%	3.00%	2.28%	3.89%	4.92%
<b>Sample 2</b>													
LIMS Sizings													
Calc. Feed	415.4	59.79	0.076	7.35	0.003	0.002	-0.42	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%
+180µm	52.2	58.73	0.076	8.10	0.004	0.002	-0.06	12.6%	12.34%	12.61%	13.86%	16.08%	12.57%
+125µm	65.4	58.43	0.076	8.15	0.003	0.002	-0.18	15.7%	15.38%	15.80%	17.47%	15.11%	15.74%
+75µm	85.1	59.87	0.075	7.29	0.003	0.002	-0.26	20.5%	20.51%	20.29%	20.33%	19.66%	20.49%
+53µm	77.1	59.34	0.077	7.80	0.003	0.002	-0.46	18.6%	18.42%	18.87%	19.71%	17.81%	18.56%
+45µm	38.5	61.53	0.077	6.18	0.003	0.002	-0.79	9.3%	9.54%	9.42%	7.80%	8.90%	9.27%
+38µm	72.4	60.54	0.075	6.76	0.003	0.002	-0.74	17.4%	17.65%	17.26%	16.04%	16.73%	17.43%
-38µm	24.7	61.90	0.073	5.93	0.003	0.002	-0.79	5.9%	6.16%	5.73%	4.80%	5.71%	5.95%
<b>Sample 2</b>													
Saliant Pole Sizings													
Calc. Feed	449.3	47.79	0.098	15.12	0.004	0.002	0.72	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%
+180µm	72.3	43.82	0.096	17.66	0.005	0.002	1.36	16.1%	14.75%	15.84%	18.79%	18.62%	15.65%
+125µm	72.0	44.97	0.097	16.97	0.005	0.002	1.39	16.0%	15.08%	15.94%	17.98%	18.54%	15.58%
+75µm	90.9	46.33	0.102	16.12	0.004	0.002	0.99	20.2%	19.61%	21.16%	21.56%	18.73%	19.67%

SAMPLE	Weight g	Fe %	Sn %	SiO <sub>2</sub> %	P %	S %	LOI %	Department					
								Mass	Fe	Sn	SiO <sub>2</sub>	P	S
+53µm	59.2	45.85	0.104	16.32	0.004	0.002	0.69	13.2%	12.64%	14.05%	14.22%	12.20%	12.81%
+45µm	29.5	52.71	0.095	11.90	0.004	0.002	-0.21	6.6%	7.24%	6.40%	5.17%	6.08%	6.38%
+38µm	99.8	51.08	0.096	13.05	0.004	0.002	0.08	22.2%	23.74%	21.87%	19.17%	20.56%	21.60%
-38µm	25.6	58.13	0.081	8.28	0.004	0.003	-0.34	5.7%	6.93%	4.73%	3.12%	5.27%	8.31%

**Sample 3**

LIMS Sizings

Calc. Feed	384.8	63.88	0.107	3.40	0.014	0.004	0.46	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%
+180µm	70.5	64.39	0.098	2.88	0.013	0.004	0.50	18.3%	18.47%	16.80%	15.53%	17.64%	17.72%
+125µm	68.5	64.07	0.102	3.23	0.013	0.004	0.50	17.8%	17.86%	16.99%	16.93%	17.14%	17.22%
+75µm	65.6	64.12	0.105	3.12	0.014	0.004	0.48	17.0%	17.11%	16.75%	15.66%	17.67%	16.49%
+53µm	48.7	62.82	0.109	4.25	0.014	0.004	0.57	12.7%	12.45%	12.91%	15.84%	13.12%	12.24%
+45µm	13.1	62.57	0.112	4.57	0.014	0.004	0.37	3.4%	3.33%	3.57%	4.58%	3.53%	3.29%
+38µm	51.9	63.86	0.114	3.67	0.013	0.005	0.31	13.5%	13.48%	14.39%	14.57%	12.98%	16.31%
-38µm	66.5	63.93	0.115	3.32	0.014	0.004	0.43	17.3%	17.30%	18.60%	16.89%	17.92%	16.72%

**Sample 3**

Saliant Pole Sizings

Calc. Feed	460.4	53.48	0.119	11.76	0.014	0.005	1.26	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%
+180µm	72.0	57.70	0.094	8.59	0.013	0.005	1.19	15.6%	16.87%	12.40%	11.42%	14.24%	15.76%
+125µm	83.6	55.39	0.102	10.69	0.013	0.004	1.27	18.2%	18.81%	15.63%	16.50%	16.53%	14.64%
+75µm	90.3	52.01	0.116	13.27	0.014	0.005	1.32	19.6%	19.07%	19.20%	22.13%	19.23%	19.77%
+53µm	65.8	47.35	0.135	16.49	0.015	0.006	1.56	14.3%	12.65%	16.28%	20.04%	15.02%	17.28%
+45µm	30.0	50.60	0.136	13.79	0.015	0.005	1.24	6.5%	6.17%	7.48%	7.64%	6.85%	6.57%
+38µm	68.3	51.95	0.138	12.28	0.016	0.005	1.22	14.8%	14.41%	17.28%	15.49%	16.63%	14.95%
-38µm	50.4	58.72	0.127	7.28	0.015	0.005	0.91	10.9%	12.02%	11.73%	6.78%	11.50%	11.03%