Midland Research Center
A WHOLLY OWNED SUBSIDIARY OF MIDLAND STANDARD, INC.
POST OFFICE BOX 67
NASHWAUK, MN 55769-0067
PHONE: (218) 885-1951
FAX: (218) 885-1955
E-MAIL: midland@2z.net

June 18, 2009

Mr. John Siriunas
Cuervo Resources
#302 – 65 Queen Street West
Toronto, Ontario, Canada M5H 2M5

Re: Pelletizing Tests of Cuervo Concentrate Samples

Dear Mr. Siriunas:

Midland Research Center (MRC) recently completed a program of initial balling and firing of iron ore concentrate to test the ability to produce iron ore pellets from Cuervo's Peruvian-origin material. The green balls were produced from composites prepared from drillhole cuttings provided by Cuervo. This letter reports on the program and the test results that were obtained.

Introduction

Cuervo requested that four composite samples, composites V, W, and X, be prepared for testing their amenability to produce pellets. Cuervo indicated that these four composites were chosen because they provided a variety of concentrate SiO_2 and S values. The objective was to assess the ability to produce pellets that could be used as blast furnace feed or as pellets to be used for direct reduction. The K, V, W, and X composites had been previously characterized by laboratory Davis Tube and liberation grinding tests of each of those materials at Midland Research from January through March, 2009.

Test Program

As none of these samples had any known previous history of pellet testing or production, Cuervo and Midland agreed to use a standard composition to produce green balls and a generic firing sequence for the initial tests. Also, because of the initial nature of the testing, a decision was made to do mini-pot testing because the lower feed quantity required would accord with the sample size available while still providing a good initial indication of the ability to ball and pelletize the material.

The test program consisted of the following primary steps:

1. Selection of the drill core samples to be used for preparing each composite;
2. Proportional blending, based upon drill core length, of -10 mesh crushed material from each drill core to yield approximately eleven kilograms of each composite;
3. Grinding of the -10 mesh material from each composite to 97 - 99% -325 mesh;
4. One stage of lab-scale wet magnetic separation of the ground product to produce approximately eight kg of magnetic concentrate from each ground composite;
5. Splitting of 5-6 kg of single stage magnetic separator concentrate from each composite for mixing and testing to determine ability to make green balls, followed by balling tests;
6. Preparation of green balls suitable for mini-pot firing;
7. Indurating in a mini-pot to determine the ability to yield commercial-quality pellets;
8. Testing of the fired pellets.

The test program proceeded in accordance with plan. In some cases, the quantity of individual crushed core available to prepare the composite required for balling and pelletizing was limited but was adequate to prepare proportional composites that seemed reasonable for testing at this stage. Feed to the single stage wet magnetic separator had been ground to 97 – 99% -325 mesh, a size which is typically used for wet magnetic separation and which also corresponded reasonably well with the Davis Tube concentrate grade and weight recovery characteristics of the composites as determined by the January-March 2009 laboratory work.

Results – Balling

For balling, initial testing and general industry experience led to a decision to use bentonite as a binder, with a rate of 17 pounds per dry long ton. Balling to produce the mini-pot feed was done with concentrate at 9.5 to 10.1% moisture in a tire-type bench-scale balling apparatus. For the four composites, the basic green ball testing yielded the following results:

	Green Ball Quality		Green Ball Size		
Composite	18” drop	Dry compression	+1/2”	½” x 7/16”	7/16” x 3/8”
K	4.1	5.1	3.1%	51.5%	45.4%
V	4.8	5.9	1.6%	29.4%	69.0%
W	5.2	5.7	2.3%	34.7%	63.0%
X	5.4	5.5	2.2%	33.5%	64.3%

Results – Indurating

Green balls were produced in adequate quantity to perform mini-pot testing on one sample of each of the four composites. Because of the initial nature of the current testing, a non-optimized firing cycle was used that involved heating for eight minutes from ambient to 2200^{o} F, holding at approximately 2200^{o} to 2350^{o} F for four minutes, and regulated cooling back

down to about 1500° F for the following six minutes, followed by natural cooling back down to ambient temperature. The mini-pot testing results were as follows:

	Pellet Quality After Tumble		Pellet Quality - Compression	
Composite	+1/4"	%-32 mesh	Pounds	%-300 pounds
K	89.5	3.2	255	80
V	97.8	2.2	742	2
W	95.4	3.4	472	4
X	96.0	3.3	533	0

While the current testing was not intended to optimize the grade of either concentrate filtercake, green balls, or fired pellets, assays were taken at various times to assure quality control, including comparison with the results of initial characterization testing. Results of the assays as material progressed through the stages of processing follow:

	Characterization Test		Comp. Grade	Mag Separator	Pellet	
Composite	Head, %Fe	DavT Conc %Fe	Head Fe, %	Conc. % Fe	Fe, %	SiO_2, %
K	55.24	67.65	55.17	63.23	63.69	5.10
V	53.96	68.30	54.12	65.63	64.58	4.06
W	51.57	70.45	52.18	64.88	64.73	2.94
X	52.47	69.62	52.92	64.50	64.73	2.96

Comments

1. Initial balling and indurating tests done on four composites made using Cuervo drill core material indicate that production of commercial quality pellets from the Cuervo material will be possible. All four of the filter cakes balled well.
2. Visual inspection of the pellets indicated positive physical attributes. Physical testing of all pellets except pellets made from composite K demonstrated physical characteristics that are frequently seen in commercial pellets from other operations. As no serious problems were noted, it is expected that composite K will also be able to yield commercial quality pellets by normal adjustments to grind size, filtercake moisture, or binder addition rate such as would be done as part of a subsequent phase of testing for the project.
3. Quality control testing indicated that the grade of filter cake used for balling and pelletizing tests was typical of the results that were expected based upon prior characterization tests.
4. The concentrate iron grades resulting from passing through the single stage of magnetic separation were very good. A further stage of magnetic separation, possibly with some modification to the size to which the composites were ground (all four composites tested were ground to 97-99% -325 mesh, slightly coarser than had been done in the characterization work which included Davis Tube testing), will normally

result in increasing concentrate grades to more closely match the Davis Tube concentrate grades. This would also result in higher iron grades and lower silica grades in the pellets.

5. The green balls maintained good iron grade as they passed through induration.
6. The current testing of four composites was intended to provide a first indication of the ability to make commercial grade pellets. It is expected that further testing of more samples and using a series of test conditions, such as varying particle size, number of magnetic separation and sizing stages, various green ball moisture levels and binder addition rates, and other factors would further improve an already good final product.

Midland thanks Cuervo Resources for having been entrusted to do this project.

Sincerely,

Richard R. Smith
President