C. Hood System Test Protocol

MI METALS — OLDSMAR
FACILITY ID 1030114
TEST PROTOCOL for
REVISED CAPTURE & COLLECTION SYSTEM HOOD
ACTUAL VOLUMETRIC FLOWRATE MEASUREMENT
revised 4/16/08

1. In accordance with EPA Memorandum "Compliance with American Conference of Governmental Industrial Hygienists Ventilation Manual in the Secondary Aluminum Production National Emission Standard for Hazardous Air Pollutants" dated 8/12/06, EPA Method 1, and EPA Method 2.

2. Average 3 sets of traversed flowrate measurements.

3. Sample ports 90° apart with minimum 2 diameter downstream & 0.5 diameters upstream of disturbances.

4. During second charge cycle (larger tons charged and higher reactive flux rate than first charge cycle).

5. Furnace charge door opened and charge table in place.

6. Furnace burner flue gate open.

7. Emergency malfunction relief valve in stationary closed position.

8. Hood duct damper locked in fixed operational position.

9. Above test conditions 4 through 8 represent charge operation during the emission capture period when the enclosure hood will have the expected lowest flow rate.

10. Type of hood is classified as an enclosure for Aluminum Furnace.

11. Minimum requirements of 150-200 fpm capture velocity in accordance with Table 10.99.2 of 23rd Edition of the "Industrial Ventilation - A Manual of Recommended Practice".

12. Schedule annual hood flowrate measurement test and annual inspection of capture and collection system.

ME METALS — OLDSMAR
REVERBERATORY FURNACE ENCLOSURE 1100D MODIFICATION
ENGINEERING DESIGN CALCULATIONS
revised 4/16/08

New Capture Hood Face Opening

Length = 15 feet 7 inches (I.D. = 187 inches)

Width = 8 feet (I.D. = 96 inches)

Opening Area = (187 inches x 96 inches) ÷ (144 inches^2/feet^2) = 124.67 feet^2

Hood Duct Flow Rate (proposed estimate)

Duct Diameter = 36 inches (I. D. = 3 feet)

Estimated Duct Velocity = 3,500 feet/minute

Duct Area = π x (3 feet ÷ 2)^2 = 7.0686 feet^2

Flow Rate = 7.0686 feet^2 x 3,500 feet/minute = 24,740 feet^3/minute

Hood Capture Velocity (enclosure type)

Hood Velocity = 24,740 feet^3 ÷ 124.67 feet^2 = 198.4 feet/minute

Reference: Table 10.99.2 of 23rd Edition of the "Industrial Ventilation - A Manual of Recommended Practice" requires minimum 150-200 fpm capture velocity.

Sample Port Locations

Duct Diameter = 36 inches

Downstream Distance =120 inches ÷ 36 inches = 3.33 diameters

Upstream Distance = 60 inches ÷ 36 inches = 1.67 diameters

Reference: Method 1, Section 11.1.1 requires minimum 2 diameters downstream and 0.5 diameters upstream.