AUTOMATIC TRAIN OPERATING – IOCC
PRIMARY ORE

DESCRIPTION OF THE APPLICATION:

We are operating an automatic electric train (GE Harris- Wireless telecommunication system) between the mine and the crushers. The distance in between the two locations is 10 km. The train are loaded at the mine from 3 different loading locations; therefore we would like to weight each train around 1.5 km before the crusher location is reached.
There are 9 locomotive with 20 cars each. The weight of locomotive and the car are identified in the table bellow:

Table 1:

	Weight (Metric Tons)
One locomotive	120
One empty car	45 to 50
One loaded car	150 to 200

The size of the rail used on site is 136 lbs/yard. We do not have physical tag detection; therefore we are using the GE positioning system to identify each locomotive and its location.

The location to install the new scales is identified. It is in a stretch of 1 km long with a flat landscaping. During the last two years, in this area, the speed has been increased twice and now stands at 15 km/hr.

The actual scales are "Viking Scales". They are static weight scales, located at the entrance of the crushers building. They are inadequate for the application and are functioning only 1/3 of the year.

REQUIREMENTS:

There are two tracks, one going towards the crusher and the second one towards the mine. A scale is required on each one of them. The scales have to function below minus 40° C.

The weight measurement would have to be done in motion and have an accuracy of ±1%.

QUESTIONS:

- Describe the functionality of the software and coming with the scale system?
  Is the software store the data in an accessible database?
  Is the software count the number of cars, truck, axle, etc.?
  Is there a communication port on the electronic device?

- How the measurement is done – by axle or by truck?
- How the system is making the link between the train and the data?

- Is this possible to have a wireless communication system? If yes, what kind of electronics device is required?

- What would be the maximum distance between the physical scale and the electronic device?

- Are the scales and the foundation have to be heated and clear from any snow?
  Heat Traces – Infrared lamps – ballast heater required?

- Could you supply references from where this scale system is used in Canada? In United Stated?

- What is the calibration procedure and how often this has to be done?

- Could you provide a quote, including the specifications for the foundation, software, instrumentation and wireless electronic devices if available?

Railroad Scales

Coupled In-Motion (CIM) Application Form

This form provides METTLER TOLEDO with specific information that enables us to determine the system most appropriate for your coupled in-motion application.

I. CUSTOMER INFORMATION:

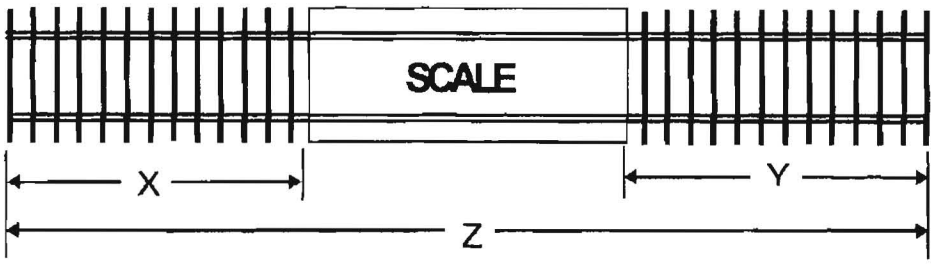
CUSTOMER INFORMATION		SITE INFORMATION:
Iron Ore Company of Canada	Name	
Martine Tremblay	Address	
2 Avalon Drive	Contact	martine.tremblay@ironore.ca
Labrador City, NL A2V 2L8	Phone	
(709) 944-8400 Ext ~~8878~~ 8415	R/R	

II. SITE INFORMATION:

IDEAL INSTALLATION: The system requires a flat, level, and continuous track (no switchpoints or cross tracks) prior to and beyond the scale. The track should be equal to 2X the length of the longest train, or 1000 ft (300 m), whichever is shorter. T

TYPICAL INSTALLATION: METTLER TOLEDO realizes that an "ideal" installation is not always possible, however, acceptable results have been attained at installations less than "ideal." Performance may need to be optimized to maintain required accuracy.

RULE OF THUMB: The scale must be installed at a location where unwanted forces (binding couplers, car vibration, and oscillations) are eliminated or repeatable and a train must maintain a *constant* speed with a variance of only +/- 1 mph or km/h



Ideal track prior to scale: _____ (X) Grade: 0 % (Z)

Ideal track beyond scale: _____ (Y) Expected speed: 15 km/h mph or km/h

Supply other site information, such as track layout and elevation plans, that may be helpful in determining the proper location of the CIM scale

Note: 75 ft (23 m) minimum concrete approach to the scale will be required on all CIM installations in each direction.

III. HARDWARE:

CAR IDENTIFICATION: To calculate the NET weight (product weight) in a car, the TARE weight must be input into the CIM controller. Please specify how this will be accomplished.

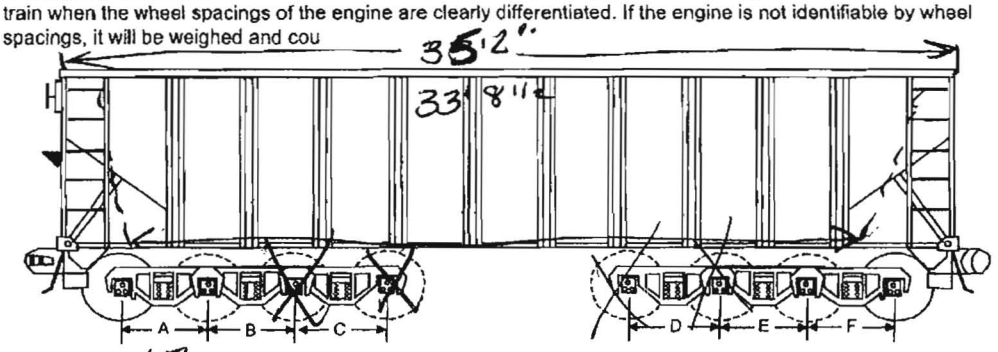
AEI*:	_____	Reweighing:	_____	ACI (Bar Code):	_____
Manual Entry:	_____	Host:	_____	Other:	_____

* Automatic Equipment Identification

20 cars / train

IV. TRAIN INFORMATION:

TRAIN DESCRIPTION: The CIM controller can automatically distinguish between engines and cars within a train when the wheel spacings of the engine are clearly differentiated. If the engine is not identifiable by wheel spacings, it will be weighed and cou



A = 6Ft B = ___ C = ___ D = ___ E = ___ F = ___ G = ___

Complete the wheel spacings as needed to depict the engines/cars in the train.
Compare the engines to the cars for spacing differences.
(Copy this figure to identify other engines/car types that will be weighed by the 9411E.)

SIZE/VOLUME: The CIM controller can store a maximum of 650 cars in memory. Determine how many trains can be stored and how often the train data must be printed or sent to a host before it is cleared.

Avg. train length: 39'10 3/4" cars x _____ trains per day/week ÷ 650 cars = _____ times cleared per day/week

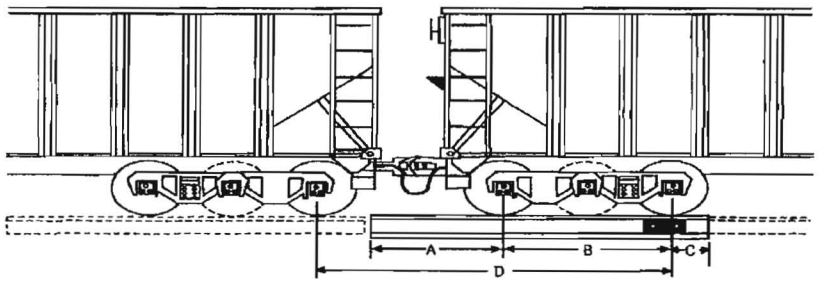
V. SCALE INFORMATION:

WTop - 10'6"
W inside 8'5"

CALCULATING SCALE SIZE: The scale length is a critical parameter in the weighing operation, as it determines whether or not particular cars can be weighed. The following formulas are used, to determine the length required to weigh site-specific cars.

A = Distance to achieve the required 1/2 second of weigh time based on train speed.

6 mph = 53 in.	10km/h = 1400 mm
5 mph = 44 in.	9 km/h = 1250 mm
4 mph = 35 in.	7 km/h = 975 mm
3 mph = 26 in.	5 km/h = 700 mm



B = Length of the longest truck to be weighed
C = Distance from wheel detector to the end of the scale (Minimum is 6 inches or 150 mm.)
D = Distance from leading wheel of longest truck to the leading wheel of next truck.

___ (A) + ___ (B) + ___ (C) = ___ (D) MINIMUM SCALE LENGTH

___ MAXIMUM SCALE LENGTH (If A + B is less than D)
Note: If A + B is greater than D, consult the factory