# Market Integrity Notice

## *Guidance*

Market Regulation Services Inc.
Services de réglementation du marché inc.

January 18, 2008

No. 2008-003

**Suggested Routing**

- Trading
- Legal and Compliance

**Key Topics**

- Algorithmic Trading
- Trading Supervision Obligations
- Unreasonable Orders and Trades

**UMIR Provisions Referenced**

- Policy 7.1 – Trading Supervision Obligations
- Rule 10.9 - Power of Market Integrity Officials

# SUPERVISION OF ALGORITHMIC TRADING


**Summary**

This Market Integrity Notice provides guidance on the supervisory requirements under the Universal Market Integrity Rules of a Participant with respect to the use of an algorithmic trading system and certain limitations on the ability of Market Regulation Services Inc. to intervene to vary or cancel trades arising from a malfunctioning algorithmic trading system.


**Questions / Further Information**

For further information or questions concerning this notice contact:


Felix Mazer
Counsel

Telephone: 416.646.7280
Fax: 416.646.7265

e-mail: felix.mazer@rs.ca

# SUPERVISION OF ALGORITHMIC TRADING

**Summary**

This Market Integrity Notice provides guidance on the supervisory requirements under the Universal Market Integrity Rules ("UMIR") of a Participant with respect to the use of an algorithmic trading system and certain limitations on the ability of Market Regulation Services Inc. ("RS") to intervene to vary or cancel trades arising from a malfunctioning algorithmic trading system.

## Supervisory Obligations of Participants

Part 1 of Policy 7.1 provides that a Participant has an obligation to supervise orders which are entered on a marketplace:

- by traders employed by the Participant;
- by an employee of the Participant through an order routing system;
- directly by a client and routed to a marketplace through the trading system of a Participant; or
- by any other means.

In the view of RS, the source of the order or the means by which an order is entered on a marketplace does not relieve a Participant of responsibility for the supervision of such orders. RS is also of the view that orders entered on a marketplace without the involvement of staff of the Participant, such as in the case of orders transmitted to a marketplace by means of an algorithmic trading system, present heightened risks to both the integrity of the markets and to the financial position of the Participant. Algorithmic trading systems provide the ability to enter a high volume of orders on one or more marketplaces in a short period of time. As such, algorithmic trading systems can disrupt a fair and orderly market if such systems "malfunction". RS expects a Participant that employs the use of an algorithmic trading system will have supervisory policies and procedures that are adequate to prevent and detect violations of UMIR and applicable securities requirements, as well as appropriate safeguards that are reasonably designed to prevent the entry and execution of "unreasonable" orders and trades on a marketplace.

The minimum elements of a supervisory system are set out in Part 2 of Policy 7.1 of UMIR. Policy 7.1 also stipulates that the supervision policies and procedures must be appropriate given the nature of the business conducted by a Participant. Given the potential impact that a malfunctioning algorithmic trading system may have on the maintenance of a fair and orderly market, RS expects that a Participant will ensure that each algorithmic trading system has been adequately tested assuming various market conditions prior to the algorithmic trading system being "engaged". In the view of RS, the Participant retains this testing obligation even in circumstances when the algorithmic trading system is provided by a third party service provider or by a client of the Participant.

If a Participant has provided Dealer-Sponsored Access, commonly known as direct market access, to a client ("DSA Client"), the Participant, as part of its on-going supervision of client orders, must be aware of the origin of the orders entered by the DSA Client, including whether the DSA Client employs the use of algorithmic trading systems. The Participant must ensure the proper testing of any algorithmic trading system used by a DSA Client to enter orders on a marketplace by means of the Dealer-Sponsored Access provided by the Participant.

In the view of RS, a Participant should develop and implement "fail-safe" mechanisms for the supervision of proprietary algorithmic trading systems that are adequate to prevent the entry of orders and execution of trades that, based on market conditions, are "unreasonable". For example, a Participant should consider developing internal parameters that would prevent or "flag" (on a real-time basis) the entry of orders and execution of trades by an algorithmic trading system that exceed certain volume, order, price or other parameters set by the Participant. In considering the scope of appropriate order and trade parameters, a Participant should tailor policies and procedures that are appropriate for the strategy or strategies being executed by a algorithmic trading system with due consideration of the potential market impact of defining such parameters too broadly. In any event, each algorithmic trading system should contain an "override" function which permits the Participant to immediately disengage the operation of the algorithmic trading system as soon as the Participant becomes aware of any potential malfunction by the algorithmic trading system. The Participant must be able to immediately prevent the flow of orders from a malfunctioning algorithmic trading system from being entered on a marketplace even if the orders are being generated by an algorithmic trading system operated by a DSA Client.

## Limitations on Variation of Unreasonable Orders or Trades

In the view of RS, the best course of action is for market forces to drive trading activity without interference by RS. Ordinarily, RS will only intervene to cancel or vary an order or trade in limited circumstances when, in the opinion of an RS Market Integrity Official, the order or trade has had an impact on a fair and orderly market or otherwise represented a risk to market integrity. In particular, RS will not ordinarily vary or cancel orders of trades resulting from errors, including orders generated by a "runaway" algorithmic trading system. Orders or trades that impact market volatility or quality (such as when there is a high volume of orders with no change in the market price of a security or successive changes in the market price of the security within acceptable parameters) will not be cancelled or varied by RS. If a Participant has allowed a high volume of orders to be entered on a marketplace by a "runaway" algorithmic trading system, the Participant will be fully exposed to the risks associated with the execution of the orders unless RS determines that the orders have affected market integrity.

Under Rule 10.9(1) of UMIR, an RS Market Integrity Official may, among other things:

- refuse to allow an order to be recorded at any time if, in the opinion of the RS Market Integrity Official, such quotation is unreasonable;

- vary or cancel a trade which, in the opinion of the RS Market Integrity Official, is unreasonable; and
- delay, halt or suspend trading in a security if unreasonable orders and trades affect the fairness and/or orderliness of the market.

If, in the opinion of an RS Market Integrity Official, a trade or series of trades in a security occurred at unreasonable prices, RS may in its sole discretion, among other things, vary the price of all trades in a security that are deemed to have occurred at an unreasonable price. If the security only trades on marketplaces monitored by RS, the decision whether to vary the trade price may be made solely by RS based on the facts of the situation. However, if the security also trades on a foreign organized regulated market, RS ordinarily seeks to co-ordinate any adjustment in the price of unreasonable trades with the foreign organized regulated market, particularly when a significant volume of trading of the security has occurred on the foreign organized regulated market during the period of the unreasonable prices. In these circumstances, if RS is unable to obtain the agreement of the foreign organized regulated market to adjust the prices of "unreasonable" trades, RS may be unable to provide relief to the Participant that entered the unreasonable orders.

**Questions / Further Information**

For further information or questions concerning this notice contact:

Felix Mazer,
Counsel,
Market Policy and General Counsel's Office,
Market Regulation Services Inc.,
Suite 900,
145 King Street West,
Toronto, Ontario. M5H 1J8

Telephone: 416.646.7280
Fax: 416.646.7265
e-mail: felix.mazer@rs.ca

ROSEMARY CHAN,
VICE PRESIDENT, MARKET POLICY AND GENERAL COUNSEL