



NOTICE TO MEMBERS

N° 2020 - 104

August 5, 2020

REQUEST FOR COMMENTS

AMENDMENTS TO THE RULES AND MANUALS OF THE CANADIAN DERIVATIVES CLEARING CORPORATION TO ACCOMMODATE THE EXTENSION OF THE TRADING HOURS AT BOURSE DE MONTREAL INC.

On July 31, 2020, the Board of Directors of Canadian Derivatives Clearing Corporation (“CDCC”) approved certain amendments to the Rules, Operations Manual, Risk Manual and Default Manual of CDCC as part of phase II of the Extended Trading Hours initiative of Bourse de Montréal Inc., which proposes to extend its trading hours by opening its market at 8:00 pm (t-1) ET.

Please find enclosed an analysis document as well as the proposed amendments.

Process for Changes to the Rules

CDCC is recognized as a clearing house under section 12 of the *Derivatives Act* (Québec) by the Autorité des marchés financiers (“AMF”) and as a recognized clearing agency under section 21.2 of the *Securities Act* (Ontario) by the Ontario Securities Commission (“OSC”).

The Board of Directors of CDCC has the power to approve the adoption or amendment of the Rules and Manuals of CDCC. Amendments are submitted to the AMF in accordance with the self-certification process and to the OSC in accordance with the process provided in the Recognition Order.

Comments on the proposed amendments must be submitted before **October 5, 2020**. Please submit your comments to:

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A copy of these comments shall also be forwarded to the AMF and to the OSC to:

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Jay Rajarathinam
President



AMENDMENTS TO THE RULES AND MANUALS OF THE CANADIAN DERIVATIVES CLEARING CORPORATION TO ACCOMMODATE THE EXTENSION OF THE TRADING HOURS AT BOURSE DE MONTREAL INC.

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I. DESCRIPTION

Following the successful launch in 2018 of phase I of the Extended Trading Hours initiative to make all Montreal Exchange (hereafter “**MX**”) interest-rate derivatives and index futures available for trading as of 2:00 am, the MX is looking to further extend its trading hours by opening its market at 8:00 pm (t-1) ET in order to better serve clients in the Asian time-zone. The MX is planning to launch phase II of this initiative to further extend its trading hours in Q2 2021.

As a result, the Canadian Clearing Derivatives Corporation (hereafter “**CDCC**” or the “**Corporation**”) has identified certain amendments to its rules and manuals that are required to support the clearing framework for this important initiative.

II. PROPOSED AMENDMENTS

The changes proposed by CDCC to its Rules and Manuals can be summarized as follows.

Within the Rules, certain definitions are added or modified, a new section A-412 is added to Rule A-4 to identify the actions that the Corporation can take against a Clearing Member that is deemed a Restricted Clearing Member (as defined below) by the Corporation, and a new section A-705.1 is added to Rule A-7 to introduce the new Overnight Margin Calls that CDCC can issue during the Overnight Clearing Cycle. Finally, Section B-301 is slightly modified for clarification purposes.

The bulk of the proposed amendments are in the Operations Manual:

- Certain definitions are added to clarify that CDCC operates in 2 different clearing cycles: the Regular Clearing Cycle and the Overnight Clearing Cycle;
- Section 2 is modified to take into account the new time frames related to the Overnight Clearing Cycle and clarifications are made with regard to currencies.
- A new subsection called “Overnight uncovered risk exposure” explaining the escalation procedure applicable during the Overnight Clearing Cycle and applicable thresholds is added to section 11; and
- A new section 12 detailing the requirements in force during the Overnight Clearing Cycle was added to the Manual.

Finally, the Risk and Default Manuals required slight changes to Section 2 “Eligible Collateral” (Risk Manual) and to section 3.5 (Default Manual) to take into account the proposed addition of non-CAD currencies.

III. ANALYSIS

a. Background

Following the launch of the first phase of Extended Trading Hours, and in order to support demand from MX’s clients for trading on a global marketplace, MX will advance the opening of trading for the following products to 8:00 pm (t-1) (from the current 2:00 am):

- Interest Rate Derivatives (CRA, BAX, OBX, CGZ, CGF, CGB, OGB, LGB)

- Index Futures & Sector Index Futures (SXF, SXM, SMJ, SCF, SXA, SXB, SXH, S XK, SXU, SXY)

In order to support this additional extension of trading hours and in line with regulatory standards of intraday risk management, CDCC has developed a robust risk framework to address overnight risk margining. This enhancement of the risk margining model to cover overnight trading is intended for the mutual benefit of all of CDCC's clearing members, and is consistent with intraday risk management capabilities of CDCC's peers.

b. Description

The Regular clearing cycle

CDCC measures, monitors and controls credit exposures of Clearing Members throughout the day. The credit exposure is monitored through Variation Margin (“**VM**”) and Initial Margin (“**IM**”) calculations and requirements. For all products cleared at the Corporation, the VM is measured and called at least daily and the IM is called four times per day.

For Futures, the VM represents, with respect to each Clearing Member, all the gains and losses of the portfolio cumulated during the day and such margin is cash-settled daily before 7:45 am on the next business day. CDCC additionally measures the VM three times per day, along with the measurements of the intra-day IM requirements (7:15 am, 10:30 am, 12:45 pm), and asks for collateral to cover the exposure if the amount exceeds predefined thresholds.¹ The IM is also measured at the end of the day (5:30 pm) and any margin deficit has to be met before 7:45 am on the next business day.

Moreover, the Corporation's rules grant it the right to perform, as required, additional intra-day margin calls throughout the entire trading day, including during the current extended trading hours, to mitigate any build-up of risk and to ensure the stability of the markets it serves.

Current overnight monitoring process

To support phase I of MX's Extended Trading Hours initiative (2018), CDCC performs a forward-looking monitoring by evaluating on a daily end-of-day basis the forecasted overnight consumption assessment of a Clearing Member's Base Initial Margin. This evaluation of potential overnight exposure is used as a trigger for proactive communication with an uncovered Clearing Member - during business hours - in order to assess financial capabilities to meet the 7:15 am margin call, and if necessary, allows collateralization for such exposure when pledging functionalities are available.

Proposed changes

In the context of MX's Extended Trading Hours initiative and the further extension to Asian hours, CDCC must ensure that it will continue to mitigate its intra-day exposure at all times, i.e. both in scheduled and unscheduled fashions.

Therefore, CDCC is proposing to make the following three changes to its processes:

¹ Additional Margin for Intra-Day Variation Margin Risk as set forth in the Risk Manual.

- i. Introducing an hourly monitoring over the entire length of the overnight cycle, i.e. between 8:00 pm (t-1) and 6:00 am (hereafter, the “**Overnight clearing cycle**”), based on real-time positions and prices;
- ii. Introducing risk-based solutions for the posting of additional collateral prior to, or during, the Overnight clearing cycle;
- iii. Enhancing the management of overnight uncovered risk processes with the introduction of a “**Restricted status**”, i.e. CDCC will now be able to declare a Clearing Member as a Restricted Clearing Member, which involves potential trading restrictions. This new status will allow CDCC to control for the build-up of exposure beyond CDCC’s risk appetite.

The details of each of these three changes are outlined below.

i. Unscheduled intra-day mitigation action: the hourly monitoring

i.1 The Regular clearing cycle (unchanged)

CDCC calculates its IM requirements four times per day in order to take into account position shifts and large market movements. CDCC has determined that 7:15 am would remain an appropriate time to perform the first IM requirement calculation of the business day. In order to limit the impact on the current CDCC processes, CDCC will not introduce additional scheduled margin runs and proposes to keep the current Regular clearing cycle unchanged, as defined and described above.

i.2 Introduction of the Overnight Clearing Cycle

Currently, the period of uncovered exposure, between the opening at 2:00 am and the first IM requirement calculation (7:15 am), lasts for 5 hours and 15 minutes. In the context of MX’s Extended Trading Hours initiative and the further extension to Asian hours, the uncovered period would expand to 11 hours and 15 minutes (from 8:00 pm [t-1] to 7:15 am). CDCC is of the view that, extended to such a long period of time, the currently established overnight monitoring process would expose the Corporation to undue credit and liquidity risk. Consequently, CDCC proposes to replace the current overnight process by an hourly monitoring covering the entire Overnight Clearing Cycle (between 8:00 pm [t-1] and 6:00 am).

- Credit exposure evaluation

In the context of the hourly monitoring, the first monitoring snapshot will occur at 9:00 pm (t-1), while the last one will occur at 5:00 am. CDCC will monitor the credit exposures of Clearing Members through the IM and VM calculations every hour, when margin requirements will be systematically updated with IM monitoring measurements. However, margin requirements will be updated with VM monitoring measurements once throughout the Overnight Clearing Cycle, at the 1:00 am monitoring snapshot. Consequently, the VM risk for the first 5 hours of the Overnight Clearing Cycle (from 8:00 pm [t-1] to 1:00 am) will be addressed at the 1:00 am monitoring snapshot, while the VM risk for the next 5 hours of the Overnight Clearing Cycle (from 1:00 am to 6:00 am) will be covered by the 7:15 am margin call. Nevertheless, the monitoring of both IM and VM measurements (“**Live margin check**”) will be available at each hourly snapshot and used to estimate the build-up of credit exposure.

- Management of overnight uncovered risk

CDCC's risk appetite for acceptable levels of uncovered risk will be measured on a per Clearing Member basis as a proportion of their margin requirements, and will therefore take the form of a relative threshold (hereafter, the "**Threshold**"). A Clearing Member whose uncovered risk exceeds the Threshold will trigger the overnight uncovered risk procedure where a margin call shall be issued for the total uncovered risk amount. However, CDCC recognizes that overnight payment capabilities can substantially vary between Clearing Members due to limited collateral posting availability as well as higher operational and funding costs. Consequently, CDCC proposes to restrict a Clearing Member's trading accesses for the rest of the Overnight Clearing Cycle in the case where overnight margin obligations cannot be met, allowing for a complete assessment of the Clearing Member's solvability and liquidity conditions before taking further action, if necessary.

Likelihood of a breach of the Threshold (leading to a margin call) before 1:00 am is reduced as VM requirements will only be updated at the 1:00 am monitoring snapshot. However, should the Live margin check be breached, a warning will be communicated to the Clearing Member with a clear breakdown of its credit exposure with respect to IM and VM. In that situation, CDCC will also make sure that the Clearing Member takes action to control the build-up of credit exposure, and/or assess the Clearing Member's readiness to face obligations at the 1:00 am monitoring snapshot (should the Clearing Member trigger the overnight uncovered risk procedure), or at the 7:15 am margin call, when the VM will be re-evaluated and included in the margin requirement.

- Participation to the Overnight Clearing Cycle

CDCC recognizes that Clearing Members are diverse in size and foreign-based activity. Consequently, the Corporation proposes to limit the impacts of the Overnight Clearing Cycle on Clearing Members who wish not to participate in a portion of the night trading or throughout. Therefore, CDCC has determined that the Threshold will apply only if at least one position movement is captured during the Overnight clearing cycle, allowing Clearing Members to be considered inactive as long as positions remain static ("**Position-based trigger**"). In other words, a Clearing Member will be considered inactive until one position movement is captured, after which such Clearing Member will be considered active for the rest of the Overnight Clearing Cycle.

The Position-based trigger is inherently controlled by the Clearing Members, which implies that it is in the Clearing Members' responsibility to control any position movement (trades in the order book may be executed during the Overnight Clearing Cycle) and to face any potential obligations such movement may trigger. The Live margin check, available at each hourly snapshot, will also have the added benefit of triggering proactive communication with all Clearing Members to better control credit exposures, whether they are considered active or not during the Overnight Clearing Cycle.

ii. Risk-based solutions for the posting of additional collateral

ii.1 Risk-based solutions

With the further extension to Asian hours, the credit exposure of Clearing Members during the night will substantially rise as a result of the broader timeframe (10 hours versus 4 hours currently) and the greater exposure to global markets. CDCC has therefore determined that Clearing Members will be required to increase their pledging capabilities to manage the build-up of their overnight credit exposure. The Corporation will be offering two distinct risk-based solutions and several collateral eligibility options as to the posting of additional collateral to manage overnight exposures.

Given the various levels of foreign-based activity amongst CDCC's Clearing Members, plus differing operational capabilities and appetite for overnight trading, CDCC will consider both pre-funding (hereafter, the "**Pre-funding solution**") and overnight payment/pledging (hereafter, the "**Payment solution**") as appropriate solutions.

- Pre-funding solution

Under the Pre-funding solution, the posting of additional collateral would occur prior to the start of the Overnight Clearing Cycle.

Clearing Members will be expected to use appropriate levels of over-collateralization as a pre-funding solution to the build-up of overnight risk. The Corporation is of the opinion that Clearing Members should be given the responsibility to control and size the appropriate levels of excess collateral, with respect to their appetite for overnight trading and in alignment with their internal levels of pre-trade risk controls vis-à-vis their clients.

- Payment solution

Under the Payment solution, Clearing Members will have demonstrated capabilities to post additional collateral during the Overnight Clearing Cycle.

As the Canadian banking system is closed during the Overnight Clearing Cycle, Clearing Members will be allowed to post a selection of non-CAD currencies to the Corporation's designated accounts through a series of Commercial Financial Institutions to be named by CDCC (the "**Correspondent banks**"). Covering the entire length of the Overnight Clearing Cycle would require a minimum of two currencies and in that context, CDCC has determined that the Euro currency and a representative Asian currency would be the most appropriate selection to answer operational and business needs.²

In addition to the use of non-CAD currencies, CDCC will be in the capacity to process any form of pre-configured eligible securities pledged through the CDS system between 12:30 am and 4:00 am, as provided in the current Rules of the Canadian Depository for Securities ("**CDS**").

² CDCC is still investigating the possibility of accepting USD currency as eligible collateral overnight (in addition to eligible non-CAD currencies, as previously mentioned), to further diversify Clearing Members' access to the Payment solution.

ii.2 Operationalization of Risk-based solutions

Given the different schedules for transacting non-Canadian currencies, and the specific schedule of the CDS pledging system, CDCC will consider two distinct time zones regarding the selection of risk-based solutions, where Clearing Members will independently choose between the Pre-funding solution and the Payment solution for each time zone:

- **“Asian hours”** - from 8:00 pm (t-1) to 1:00 am
- **“European hours”** - from 1:00 am to 6:00 am

By default, Clearing Members will be considered as part of the Pre-funding solution since it requires minimal additional operational set up (if any). Clearing Members who wish to qualify for the Payment solution to cover Asian hours will need to have a demonstrated ability to pay margin in a representative Asian currency through the Correspondent banks. Likewise, Clearing Members who wish to qualify for the Payment solution to cover European hours will either need to have a demonstrated ability to pay margin in the Euro currency through the Correspondent banks, or to demonstrate the ability to access CDS pledging systems overnight.

Clearing Members who elect to qualify for the Payment solution during either Asian or European hours will automatically be considered as part of the Payment solution at the 1:00 am monitoring snapshot (juncture of Asian and European hours). Therefore, should a margin call be triggered by the 1:00 am monitoring snapshot, Clearing Members will have the flexibility to meet the call using either the representative Asian currency, the Euro currency, or any form of eligible securities pledged via CDS.

Furthermore, CDCC will allow Clearing Members under the Pre-funding solution to enter the Payment solution at any time after the required certification requirements are passed, and CDCC will conduct routine testing of the Payment solution from time to time to ensure that operational readiness is maintained. Should a Clearing Member fail the test, it will be re-assigned to the Pre-funding solution.

ii.3 Considerations around the use of non-Canadian currencies

The use of non-CAD currencies as eligible collateral will be subject to a detailed analysis with respect to the selection of eligible currencies and Commercial Financial Institutions acting as custodians for non-CAD currency collateral pledged during the Overnight clearing cycle.

Commercial Financial Institutions acting as custodians for non-CAD currency collateral pledged during the Overnight clearing cycle will be selected in accordance with CDCC’s Investment and Custody Risk Management Framework. This Framework strives to minimize the risk of loss on any custody or investment arrangement and to ensure liquidity in the event of a participant failure, by investing in, or employing highly rated, low risk providers/investments. The Investment and Custody Risk Management Framework also sets collateral risk limits at the institution level and overall deposit risk limits are set forth by CDCC’s Participant Asset Investment Policy. Amongst other considerations, the latter establishes risk limits applicable to cash collateral amounts held in the name of CDCC and CDS other than central government or its direct agency in order to minimize liquidity, credit and the concentration of risk.

In line with the PFMI liquidity best practices and above mentioned Framework and Policy, CDCC will also open a committed FX swap facility in order to enable prompt conversion of foreign currencies into Canadian currency in the event of a liquidity constraint or default of one of its Clearing Members.

Moreover, CDCC will also manage its market and liquidity exposure to foreign currencies like any other eligible collateral, first, by setting up appropriate risk collateral concentration limits at the Clearing Member level, and second, by calibrating prudent haircuts and evaluating the latest value in Canadian dollars. In addition, although non-CAD currencies will be considered as eligible collateral for risk exposure calculations over the entire business day, CDCC will only accept posting of non-CAD currencies during the Overnight Clearing Cycle.

iii. The management of overnight uncovered risk

iii.1 The Restricted status

In the absence of payment capacity and the appearance of uncovered risks beyond CDCC's risk appetite during the Overnight clearing cycle, the Corporation has determined that restricting a Clearing Member's trading accesses for the rest of the Overnight Clearing Cycle would allow CDCC to control the Clearing Member's credit risk exposure while maintaining mutual protection for all Clearing Members. Such restrictions will take the form of a new status that would only be applicable in the context of the Overnight Clearing Cycle (the "**Restricted status**") where the Clearing Member's³ participation in MX's overnight trading would be halted for the rest of the Overnight Clearing Cycle, i.e. trading access and give-up agreements would be cut off, and any orders in the order book would be cancelled. While allowing CDCC to perform an assessment of the Clearing Member's solvability and liquidity conditions, the introduction of the Restricted status shall also reduce the risk of excessive time-related stress and/or misjudgement, as well as the risk of inadvertently triggering a default management procedure.

iii.2 The Threshold

Under the hourly monitoring process, Clearing Members who do not elect to demonstrate their ability to post collateral overnight may be declared by CDCC as Restricted Clearing Members immediately after reaching maximum acceptable levels of uncovered risk, instead of receiving a margin call and being granted one hour to meet their obligation. In other words, the Threshold will trigger different actions depending on the Clearing Member's established risk-based solution. Consequently, CDCC proposes the following terminology for the Threshold:

- "**Margin Call threshold**" - Maximum acceptable level of uncovered risk with respect to CDCC's risk appetite for the Payment solution;
- "**Trading threshold**" - Maximum acceptable level of uncovered risk with respect to CDCC's risk appetite for the Pre-funding solution.

Additionally, CDCC will use the following terminology to address Live margin check breaches:

³ Including all Approved Participants and Foreign Approved Participants cleared by the Clearing Member.

- **“Warning threshold”** - Maximum acceptable level of uncovered risk with respect to CDCC’s risk appetite under the Live margin check.

iii.3 Escalation procedure

CDCC proposes to redesign its internal and external escalation procedure to better serve the updated process for the management of uncovered risk during the Overnight Clearing Cycle. The proposed **“Overnight uncovered risk exposure”** escalation procedure is separate and in addition to the Payment Failure escalation procedure currently detailed in the Operations Manual. This new escalation procedure outlines how CDCC and its clearing members will interact during the Overnight Clearing Cycle and the impacts of Threshold breaches by a Clearing Member.

CDCC will offer operational support with designated staff to cover the entire Overnight Clearing Cycle and to support the hourly monitoring. The staff will be dedicated to monitoring the risk exposure, performing Live margin check activities, issuing margin calls and triggering the appropriate escalation procedures (e.g. Restricted Status) if needed.

c. Comparative analysis

While developing its clearing model to support the extension of trading hours from a clearing perspective, CDCC conducted benchmarking analysis of other CCPs’ risk models during their overnight trading sessions. CDCC consulted publicly available information about Eurex Clearing (**“EUREX”**), Australian Securities Exchange (**“ASX”**), CME Clearing (**“CME”**), and Hong Kong Exchanges and Clearing Limited (**“HKEX”**) extended hours or overnight clearing functionality. The comparative table including comparisons with CDCC’s proposed model is attached, and the detailed analysis of each follows:

i.EUREX

- EUREX offers 21-hour trading and clearing functionality (1 am CET to 10 pm CET);
- EUREX has one settlement cycle per day;
- The likelihood of intra-night margin calls is minimized; only position changes can generate a margin call and a threshold for intra-night margin calls of generally 10% of the clearing member’s overnight margin requirement is used.

Tools to mitigate probability of intra-night margin calls

- EUREX encourages over-collateralization (cash and securities) on the preceding day, prior to the start of the extended trading session;
- EUREX has the ability to automatically replenish a permanent cash balance (PCB), the level of which is defined by the clearing member;
- EUREX encourages deletion of open orders by clearing members prior to the start of the extended trading session.

Eligible collateral

- Foreign currencies accepted for overnight margin payments are AUD and USD (the latter for which manual cash transfers are completed through a selection of correspondent banks named by EUREX).

ii.ASX

- ASX offers 22-hour trading and clearing functionality;
- ASX has one combined settlement cycle at 11:00 am AEST.

Inclusion in overnight margining process

Clearing members are considered 'in scope' for the purpose of the overnight margining process in one of the two following cases:

- The clearing member accounts for greater than 2% of total initial margin, for the whole market, as at the review date; and The 80th percentile of margin movements for either of the clearing member's House or Client accounts are greater than USD \$10 million (based on one year's data in overnight activity); or
- The clearing member accounts for more than 25% of clearing (based on one year's data in overnight activity)

Clearing members are advised on a quarterly basis if they are within or out of scope for the overnight margining process.

Overnight margin process

The overnight margin process is comprised of two components:

- An additional intraday risk management run conducted at approximately 2:00 am AEST based on changes in initial margin - margin calls in USD are made for any margin shortfalls greater than USD \$3 million for House, and USD \$5 million for Clients;
- Clearing members must maintain a margin buffer to cover potential variation margin exposures – the buffer is split across House and Clients accounts and resized each quarter.

2:00 am Intraday call amount

The call amount at 2:00 am AEST considers the initial margin movement between the most recent settled end of day initial margin and the initial margin calculated at 2:00 am AEST. All margin call calculations are performed by account and include any excess collateral available to cover margin movements. Any intraday margin calls made since the last settled end of day initial margin are treated as additional collateral. In the event of extreme market moves, ASX may call for additional margin, notified to participants at the time of the call. Affected clearing members are notified of margin calls at approximately 2:30 am AEST and calls must be paid within 2 hours of the call. Once a margin call notification is received, funds are required to be deposited into the nominated ASX bank account.

Pre-funding margin requirement

In addition, 'in scope' clearing members are required to prefund an AUD margin buffer to offset potential unfavourable price movements in the overnight session. The buffer is calculated by ASX based on the participants' average 80th percentile variation margin exposure movements from the third intraday margin calculation until 2:00 am AEST (based on one years' data). The margin buffer is not a credit for regular margin calls, additional initial margin calls or intra-day margin calls.

iii.CME

- CME offers 23-hour trading and clearing functionality;
- CME has two settlement cycles daily.

Risk Management

CME monitors intraday price movements and trading activity throughout the trading session. To assess the impact of these price and activity changes on clearing members, CME tracks market participants' exposures in real-time. CME conducts intraday mark-to-market calculations, which are performed on clearing member and customer positions and reviewed by CME throughout the day and overnight.

Eligible collateral

- USD and up to \$250 million in a wide range of foreign currencies;
- Wide selection of securities, including foreign securities, are eligible for pledging in respect of margin requirements through a network of global custodians.

d. Analysis of impacts

i.Impacts on market

The risk mitigation proposed by CDCC are designed to ensure that CDCC is not exposed to undue credit and liquidity risk overnight, while minimizing the impact on Clearing Members. Based on the projected volume for the entire Overnight Clearing Cycle (source: MX), a gradual impact is expected on the Margin and Clearing Funds over the years.

CDCC has estimated that the overall Margin Fund could gradually increase by up to 16.59% and the overall Clearing Fund by up to 12.26% by the year 2025. This estimation assumes that all Clearing Members currently trading on the targeted futures contracts will increase their open interest as outlined in the table below.

However, all things being equal, this Clearing Fund increase will mainly be absorbed by Clearing Members contributing to the increase in cleared positions during the extended trading hours.

Key metrics	Year 1	Year 2	Year 3	Year 4	Year 5
Estimated Daily Volume (1)	28 559	39 309	49 482	61 050	70 631
Estimated Open Interest	190 391	262 057	329 879	407 001	470 872
Percentage of total Margin Fund (2)	6.71%	9.23%	11.62%	14.34%	16.59%
Percentage of total Clearing Fund (2) (3)	4.96%	6.82%	8.59%	10.59%	12.26%
Liquidity (MtM in case of default) (2) (4)	292M	403M	507M	625M	724M

- (1) Keeping the total Daily Volume constant
- (2) Based on the current distribution of Futures positions
- (3) Impact estimated by selecting the Clearing Member with the highest Shortfall
- (4) Impact estimated by selecting the Clearing Member with the highest MTM

ii. Impacts on technological systems

Technological impact assessment and management are a critical part of MX Extended Trading Hours project and CDCC's related changes to its clearing model. CDCC and MX are engaging with Clearing Members and Participants, as well as independent software vendors, with respect to technological and operational impacts.

To fully support the launch of phase II of the Extended Trading Hours initiative, CDCC will perform some internal development to its systems. These developments are being clearly identified by CDCC and an appropriate rollout plan is being established.

From a Clearing Member's perspective, except for the internal adjustments that could be required to support the hourly monitoring, CDCC is of the view that the technological impacts on Clearing Members are minor, or nonexistent. CDCC will continue its engagement with the Clearing Members and their service providers along the course of the project, in order to ensure operational readiness.

iii. Impacts on trading functions

The initiative is jointly proposed by MX and CDCC and appropriate rule changes are being proposed by MX in parallel to the proposed amendments.

iv. Public interest

The proposed amendments to CDCC's Rules and Manuals are designed to adapt CDCC's risk management framework to MX's Extended Trading Hours initiative. Therefore, such amendments will foster and perfect CDCC's financial resilience on a day-to-day basis and in times of extreme market conditions. Having a strong and resilient financial market infrastructure is a desirable outcome for the Canadian financial markets and ensures that CDCC can fulfill its public interest mandate.

IV. PROCESS

The proposed amendments, including this analysis, must be approved by CDCC's board of directors and submitted to the Autorité des marchés financiers, in accordance with the regulatory self-certification process, and to the Ontario Securities Commission in accordance with the rules stated in Appendix "A" of Schedule "C" of CDCC Recognition Order dated April 8, 2014 (as amended from time to time). The proposed amendments and analysis will also be submitted to the Bank of Canada in accordance with the Regulatory Oversight Agreement.

Subject to public comments, the proposed amendments will take effect during Q2 2021. The effective date of CDCC's proposed amendments to the Rules and Manuals is dependent on MX's Extended Trading Hours initiative effective date.

V. ATTACHED DOCUMENTS

Appendix A: Benchmarking table

Appendix B: Proposed amendments to the Rules and Manuals.

Appendix A: Comparative Analysis Table

	Hours	CDCC	EUREX	ASX	CME
Clearing (Futures)	Regular	6:00am-4:30pm	8am - 10pm EU time (14h)	8.30am - 4.30pm	5pm-4pm (23h)
	Extended	2am-6am (Europe) 8pm-2am (Asia)	from 8am HKT (6h/7h*) *depending on summer time	5.10pm - 7.00am	5pm-4pm (23h)
Daily Settlement		7:45 am	8am CET (EUR) / 9am CET (CHF/GBP)	Combined settlement 11am for 8am ITD and 7:30pm EOD	Intra-day 12:30 pm, 11 pm EOD and payable at 7:30 am and 1:30 pm
Risk Management	Regular	7:15 am (Phase 1), 10:30 am, 12:45 pm and 5:30 pm	Real time (8am-10pm EU time) 30-60 minutes to cover	Intraday 8am, 11am, 1:30pm, 7:30pm (EOD) 1-2h to cover the margin call	Intra-day 12:30 pm, 11 pm EOD and payable at 7:30 am and 1:30 pm Real time pre-risk sophisticated monitoring Real time margin monitoring
	Extended	Near Real Time Margining The "Overnight clearing cycle dedicated to the clearing of products traded between 8:00 pm and 5:30 am Margin calls will be issued to participating clearing members whose uncovered exposure due to position change exceeds the specified threshold (e.g. threshold approximately 10% of the clearing member's margin requirement). Overcollateralization, active management of client orders prior to ATS to avoid margin calls overnight	Real time (from 8am HKT) 30-60 minutes to cover Receive margin calls only when there is a change in the positions (i.e. no intra night margin call solely based on market movements) and only issue a margin call during Asian hours, if the intraday margin limit has been exceeded (~ 10% of the Clearing Member's overnight margin requirement) Overcollateralization, active management of client orders prior to ATS to avoid margin calls overnight	In scope to receive margin calls, only if The Clearing Participant accounts for more than 2% of total initial margin or, the Clearing Participant accounts for more than 25% of clearing for night session activity Reviewed on a quarterly basis 2h to cover the margin call Margin calls are not made on US public holidays A pre-funding margin buffer is required	Real time pre-risk sophisticated monitoring Real time margin monitoring No details on applicable thresholds
Collateral Accepted	Regular	Cash, Bonds (CAD, USD)	Cash (EUR, CHF, GBP and USD from 2:00 PM), Securities, Bonds, ETFs Source	AUD, Securities, Bonds Source	USD and up to 250 MM in Foreign currencies (FX) Wide selection of securities including foreign securities
	Extended	CBks: Cash (JPY, EUR) Exploring direct debit capacity Bonds (CAD 12:30 - 4 am)	CBks: AUD, USD via correspondent banks	CBks: Daily USD margin call into nominated account (no direct debit) 2020, ASX Clear (Futures) plans to be able to monitor and manage intraday exposures created during ASX 24's Night Session on a near real-time basis	If required they have settlement agents across the globe accepting foreign securities.

Appendix B: Proposed amendments to the Rules and Manuals

[See attached]



CANADIAN DERIVATIVES CLEARING CORPORATION

RULES

~~JUNE 16, 2020~~

PART A – GENERAL

RULE A-1 DEFINITIONS

Section A-101 SCOPE OF APPLICATION

Unless the context otherwise requires or unless different meanings are specifically defined, for all purposes of these Rules the capitalized terms used herein shall have the meanings given them in Section A-102.

Section A-102 DEFINITIONS

[...]

“**Business Day**” – means any day on which the Corporation is open for business.

“**Business Hours**” – means from 2-8 p.m. t-1 (ET) to the Close of Business the next day on any Business Day.

[...]

“**Cash**” – means money in the lawful currency of Canada and in any other currency accepted by the Corporation.

[...]

“**Overnight Margin Call**” – means the requirement to deposit supplementary Margin, as determined by the Corporation in accordance with Section A-705.1, at any time the Corporation deems necessary during the Overnight Clearing Cycle, as such term is defined in the Operations Manual.

[...]

“**Restricted Clearing Member**” – has the meaning attributed thereto in Section A-412.

[...]

RULE A-2 MISCELLANEOUS REQUIREMENTS

[...]

SECTION A-213
ACCOUNTS WITH FINANCIAL INSTITUTIONS

Every Clearing Member shall designate an account or accounts established and maintained by it in a ~~Canadian~~ financial institution acceptable to the Corporation for each currency of the Transactions that it enters into.

[...]

RULE A-4
ENFORCEMENT

[...]

SECTION A-412
RESTRICTED CLEARING MEMBER

- (1) A Clearing Member who is unable to meet an Overnight Margin Call or breaches certain risk exposure thresholds during the Overnight Clearing Cycle (as such term is defined in the Operations Manual) may be deemed by the Corporation as a Restricted Clearing Member.
- (2) In addition to a measure made available to the Corporation under the Rules and the Application for Membership, where a Clearing Member is deemed by the Corporation as a Restricted Clearing Member as provided for in the Operations Manual, the Corporation may take any one of the actions prescribed by the Rules in respect of such Clearing Member including, but not limited to:
 - (a) prohibiting and/or imposing limitations on the acceptance and/or clearance of Transactions by such Clearing Member, which could result in: Clearing Member's trading access and give-up agreements on the Montreal Exchange being restricted, and orders of the Clearing Member and of its Clients being canceled; and
 - (b) sanctioning, reprimanding, fining or imposing a penalty on the Clearing Member.

[...]

RULE A-7 MARGIN REQUIREMENTS

Section A-701 MARGIN MAINTENANCE AND PURPOSE

- (1) Prior to the Settlement Time on every Business Day, every Clearing Member shall be obligated to deposit Margin as determined by the Corporation in accordance with the Margin requirement methodology set out in the Risk Manual, in respect of:
- (a) each Long Position,
 - (b) each Short Position,
 - (c) each Assigned Position,
 - (d) each exercised Option position, and
 - (e) each tendered Futures position;

in each account maintained by such Clearing Member with the Corporation at the opening of such Business Day, including each such position that arises out of a Transaction having a Settlement Time on such Business Day, but excluding Short Positions and Assigned Positions for which either the Underlying Interest or the Underlying Interest Equivalent as specified in Section A-706 has been deposited with the Corporation. When determining whether additional Margin is required from a Clearing Member, the Corporation shall take into account, subject to Subsection A-704(2), all Margin deposited by the Clearing Member and not returned by the Corporation to the Clearing Member.

- (2) The Corporation shall apply the suspended Non-Conforming Member's Margin Deposit (including, without limitation, Margin and Clearing Fund), subject to Subsection A-701(3), to the discharge of:
- (a) the Non-Conforming Member's obligation with respect to any Transaction accepted by the Corporation, whether such failure is caused or not by the Non-Conforming Member;
 - (b) a failure or anticipated failure to make any payment to the Corporation required of the Non-Conforming Member, whether such failure is attributable to the Non-Conforming Member or not;
 - (c) any loss or expense anticipated or suffered by the Corporation upon the liquidation of the Non-Conforming Member's position;
 - (d) any loss or expense anticipated or suffered by the Corporation pertaining to the Non-Conforming Member's obligations in respect of exercised Options or tendered Futures or OTCI for which settlement has not yet been made or in connection with hedging transactions effected for the account of the Corporation pursuant to Rule A-4 in respect of the Non-Conforming Member's positions in Options, Futures and OTCI;

- (e) any protective or hedging transaction effected for the account of the Corporation pursuant to Rule A-4 in respect of the Non-Conforming Member's positions in Options and Futures;
 - (f) any protective or hedging transaction effected for the account of the Corporation pursuant to Rule A-4 in respect of the Non-Conforming Member's positions in any OTCI; or
 - (g) subject to Section A-1B01, any other situation determined by the Board.
- (3) Each Clearing Member grants to the Corporation a first ranking pledge over all property (including without limitation Margin and Clearing Fund) that constitutes Margin Deposit or other property which may from time to time be in the possession or control of the Corporation, or in the possession or control of a person acting on behalf of the Corporation. This pledge shall secure the performance by the Clearing Member of all of its obligations to the Corporation and, to the extent such pledge relates to Clearing Fund deposits, it shall also secure the performance by another Clearing Member which is a Non-Conforming Member of its obligations to the Corporation, all subject to the provisions of Rule A-6 and the Default Manual, provided that, except for Clearing Fund deposits, Margin Deposits with respect to a Client Account shall only secure the performance by the Clearing Member of its obligations in respect of that Client Account, and Margin Deposits with respect to a Market Maker Account shall only secure the performance by the Clearing Member of its obligations in respect of that Market Maker Account. Notwithstanding the foregoing, if the Clearing Member does not identify its Margin Deposits with respect to each of its accounts, the Corporation shall use all Margin Deposits without distinction as securing all the obligations of the Clearing Member in respect of all its accounts. The Clearing Member shall execute and deliver (or cause to be executed and delivered) such other documents as the Corporation may from time to time request for the purpose of confirming or perfecting the pledge granted to the Corporation by the Clearing Member; provided that the failure by the Corporation to request or by the Clearing Member to execute and deliver (or cause to be executed and delivered) such documents shall not limit the effectiveness of the pledge in favour of the Corporation.
- (4) Except as permitted under Subsection A-609(4) in respect of Clearing Fund deposits and under Subsection D-607 in respect of Net Variation Margin Requirement deposits, and without limiting the right of the Corporation to invest the Margin Deposits in the form of cash under Subsections A-608(1) and A-707(1), the Corporation shall not grant a pledge over, transfer, or terminate under an Account Control Agreement authorizations to deal with, any property deposited as Margin Deposit by a Clearing Member which has not been designated as a Non-Conforming Member and suspended by the Corporation.
- (5) Without limiting the rights of the Corporation under Subsection A-701(2), the Corporation may at its sole discretion grant a pledge over or transfer all property deposited as Margin Deposit (including, without limitation, Margin and Clearing Fund) by a Clearing Member which has been suspended, as security for, or in connection with, the Corporation's own obligations to any person incurred in order to obtain liquidity or credit for the purpose of assisting the Corporation to honour its obligations on a timely basis further to the designation by the Corporation of such Clearing Member as being a suspended Clearing Member. In such circumstances, the Corporation shall grant a pledge over or transfer such Clearing Member's Margin Deposits before doing so with respect to the Clearing Fund deposits of other Clearing Members, in accordance with Subsection A-609(4). The Corporation shall be deemed to continue to hold all Margin Deposits regardless of whether the Corporation has exercised its rights under this Subsection A-701(5).

- (6) Any account or sub-account of a Clearing Member with the Corporation that reflects Financial Assets deposited with the Corporation by or on behalf of such Clearing Member for Margin purposes and to which such Financial Assets are credited, shall be considered a securities account for purposes of the QSTA or any similar securities transfer law of any other jurisdiction.

Section A-702

DISCRETIONARY MARGIN RULE

The amount of Margin which may be required from a Clearing Member pursuant to this Rule A-7 (other than Margin required pursuant to Rule D-607) may be varied by the Corporation at any time and from time to time without advance notice whenever the Corporation, in its sole discretion, considers such variation necessary or advisable for the protection of the Corporation, Clearing Members or the investing public.

Section A-703

DAILY MARGIN ACTIVITY

- (1) Each Business Day, the Corporation shall make available to each Clearing Member for each account maintained by the Clearing Member with the Corporation the reports which shall show the amount of Margin required to be deposited by virtue of the Clearing Member's positions. All Margin requirements shall be satisfied by Settlement Time on each Business Day notwithstanding any error in the information reflected in the reports issued.
- (2) If for any reason a report is not available to a Clearing Member, it shall be the responsibility of that Clearing Member to ascertain from the Corporation the amount of Margin required to be deposited, so that the Margin requirements are met before Settlement Time each Business Day.

Section A-704

WITHDRAWALS OF MARGIN

- (1) Subject to Subsection A-704(2), in the event that on any particular day the amount of a Clearing Member's Margin on deposit exceeds the amount required to be deposited by such Clearing Member on such day pursuant to this Rule A-7, the Corporation shall authorize the withdrawal of the amount of the excess upon the submission to the Corporation, by such Clearing Member during the hours specified by the Corporation, of a withdrawal request in the form prescribed by the Corporation provided that the Clearing Member shall provide the Corporation with sufficient prior notice of such withdrawal request as set out in the Operations Manual.
- (2) If a Clearing Member has excess Margin deposited in respect of any Firm Account, the Corporation shall be entitled to apply such excess (or a portion thereof) as is necessary to meet the Margin requirements in respect of a Client Account or Market Maker Account. If a Clearing Member has excess Margin deposited in respect of any Client Account or any Market Maker Account, the Clearing Member shall not be entitled to apply such excess (or a portion thereof) to meet the Margin requirements in respect of a Firm Account; provided, however, that if the Clearing Member does not identify its Margin Deposits with respect to each of its accounts, the Corporation shall apply the Margin deposited by a Clearing Member indistinctively to meet the Margin requirements in respect of all its accounts.

Section A-705 INTRA-DAY MARGIN CALLS

- (1) Section 2 of the Operations Manual specifies the time of the Intra-Day Margin Calls.
- (2) The Corporation may also perform additional Intra-Day Margin Calls and require the deposit of supplementary Margin (other than Margin required pursuant to Rule D-607) by any Clearing Member in any account at any time during any Business Day which the Corporation, in its sole discretion, considers necessary or advisable to reflect changes during such day in the Market Price of any Underlying Interest in order to protect the Corporation, Clearing Members or the public.
- (3) Subject to Subsection A-704(2), if a Clearing Member has excess Margin, the Corporation shall be entitled, upon determining that supplementary Margin is required in accordance with paragraph (2) above, immediately to apply such portion of the excess Margin as is necessary to meet the supplementary Margin requirements. The Corporation shall notify the Clearing Member as soon as practicable of such application. If there is no excess Margin then on deposit, the Corporation will notify the Clearing Member of the amount of supplementary Margin required. Such supplementary Margin shall be deemed to be owing upon a Clearing Member receiving notice thereof and shall be deposited by the Clearing Member within one hour of the Clearing Member receiving such notice, or such longer time as may be provided in the Operations Manual or permitted by the Corporation. Credit for all such supplementary Margin deposits, shall be reflected on the Daily Settlement Summary Report on the following Business Day.

SECTION A-705.1 OVERNIGHT MARGIN CALLS

- (1) The Corporation may perform Overnight Margin Calls and require the deposit of supplementary Margin (other than Margin required pursuant to Rule D-607) by any Clearing Member in any account at any time during the Overnight Clearing Cycle (as such term is defined in the Operations Manual) which the Corporation, in its sole discretion, considers necessary or advisable to reflect changes during such day in the Market Price of any Underlying Interest in order to protect the Corporation, Clearing Members or the public.
- (4)(2) Subject to Subsection A-704(2), if a Clearing Member has excess Margin, the Corporation shall be entitled, upon determining that supplementary Margin is required in accordance with paragraph (1) above, immediately to apply such portion of the excess Margin as is necessary to meet the supplementary Margin requirements. The Corporation shall notify the Clearing Member as soon as practicable of such application. If there is no excess Margin then on deposit, the Corporation will notify the Clearing Member of the amount of supplementary Margin required. Such supplementary Margin shall be deemed to be owing upon a Clearing Member receiving notice thereof and shall be deposited by the Clearing Member within one hour of the Clearing Member receiving such notice, or such longer time as may be provided in the Operations Manual or permitted by the Corporation. Credit for all such supplementary Margin deposits, shall be reflected on the Daily Settlement Summary Report on the following Business Day.

PART B – OPTIONS

RULE B-3 TENDER AND ASSIGNMENT OF EXERCISE NOTICES

Section B-301 EXERCISE OF OPTIONS

Unless otherwise determined by the Corporation, issued and unexpired Options may be exercised only in the following manner, ~~during the Business Hours of~~ on each Business Day during the hours specified by the Corporation:

- (1) American Options:
 - (a) on the Expiration Date in accordance with Rule B-307 hereof; or
 - (b) on a Business Day other than the Expiration Date a Clearing Member desiring to exercise an Option may tender an Exercise Notice to the Corporation until the Close of Business on such Business Day.
- (2) European Options:
 - (a) on the Expiration Date in accordance with Rule B-307 hereof.

Only the Clearing Member who holds the relevant open position may tender an Exercise Notice on that position.



**CANADIAN DERIVATIVES CLEARING CORPORATION
CORPORATION CANADIENNE DE COMPENSATION DE PRODUITS DÉRIVÉS**

OPERATIONS MANUAL

~~JUNE 12, 2020~~

[...]

[Section 1 - Definitions]

DEFINITIONS

“Automatic Exercise” - a process by which CDCS will exercise In-the-Money Options at a pre-determined threshold.

“Assets” - Securities pledged and cash deposited by the Clearing Member to the CDCC.

“CAD” - Canadian Dollars.

“CDCC Clearing Application” - CDCS and all the processes associated with it, as may be supplemented or otherwise changed from time to time.

“Closing Transaction” - any Transaction that is either a Closing Buy Transaction, a Closing Purchase Transaction, a Closing Sell Transaction or a Closing Writing Transaction, as such terms are defined in the Rules, and in all cases that reduces or eliminates the Clearing Member’s Open Interest.

“Converge” - marketing brand of the portion of the CDCC Clearing Application that captures and processes OTCI Transactions, including Fixed Income Transactions.

“Eligible Collateral” - collateral which may be deposited with the Corporation for the purpose of fulfilling Margin requirements and which meets certain criteria described in the Risk Manual.

“Exerciser” - a Clearing Member that holds a Long Position in a particular Series of Options and submits an Exercise Notice to CDCC.

“Expiry Friday” - the third Friday of the month, unless that Friday is not a Business Day, then the Business Day preceding the third Friday of the month.

“FIFO Period” - the quarterly delivery period for Futures contracts on Government of Canada bonds, in accordance with Contract Specifications of the relevant Exchange.

“Forward Repurchase Transaction” - a Repurchase Transaction in respect of which the Open Leg has not settled yet at the time of the relevant report.

“FTP Downloads” - Clearing Member’s access to files and reports on an FTP server that is part of the CDCC Clearing Application.

“Inquiry Screen” - Graphical User Interface (GUI) view of the CDCC Clearing Application.

“Large Value Transfer System” or “LVTS” - an electronic wire system introduced by the Canadian Payments Association in February 1999 to facilitate the transfer of irrevocable payments in Canadian dollars across the country.

“Limited Clearing Member (LCM)”

- has the meaning given thereto in Section A-102 of the Rules.

“Margin Fund Account” - the CDCS record provided to each Clearing Member containing all Margin deposited by such Clearing Member to CDCC, in respect of any of the following: (1) Base Initial Margin (or Adjusted Base Initial Margin, as the case may be), (2) Additional Margin for Market Liquidity Risk, (3) Additional Margin for Specific Wrong-Way Risk, (4) Additional Margin for Mismatched Settlement Risk, (5) Additional Margin for Intra-Day Variation Margin Risk, (6) Additional Margin for Unpaid Option Premium

Exposure Risk, (7) Additional Margin for Banking Holiday Risk, (8) Additional Margin for Variation Margin Delivery Risk, (9) Additional Capital Margin Risk, (10) Additional Margin for Uncovered Risk of Limited Clearing Members, (11) Variation Margin for Options, and (12) Variation Margin for Unsettled Item; the whole in accordance with the Risk Manual, or otherwise as set forth in Section 8-1 hereof.

“Mini Contract” - a Future or an Option that has the same Underlying Interest as a Standard Contract but having a Unit of Trading that is a ratio of the Standard Contract in accordance with applicable Contract Specifications.

“Net Settlement Position” - all the future Net Delivery Requirements and Net Payment Against Delivery Requirements of a Clearing Member, as reported by CDCC on a daily basis, taking into account all Fixed Income Transactions that have settled during the day and all new Fixed Income Transactions that have been novated to CDCC.

“Net Variation Margin Requirement” - has the meaning given thereto in Section D-601 of the Rules. Reference will be made to (Fixed Income) Net Variation Margin Requirement in this Manual.

“Open Position File” - database of the CDCC Clearing Application which compiles the Open Positions of all Clearing Members. Each Clearing Member can access the information pertaining to his accounts only, not to other Clearing Members’ accounts.

“Opening Transaction” - any Transaction that is either an Opening Buy Transaction, an Opening Purchase Transaction, an Opening Sell Transaction or an Opening Writing Transaction as set forth in Section A-102 of the Rules.

“Operational Notices” - formal notifications to the Clearing Members, representing items that are not published on CDCC’s website. These documents are available on the Secured Website.

“OTCI Equity Options” - over the counter options on an equity, bearing characteristics that differ from Exchange traded Options and are cleared by CDCC through *Converge*.

“Overnight Clearing Cycle” - clearing cycle starting at 8:00pm (t-1) and ending at 6:00am ET.

“Position Transfer” - this is the CDCC Clearing Application function to move a position from one Clearing Member to another.

“Production Schedule” - all of the timelines that are followed by CDCC, as set forth in Section 2 of this Operations Manual.

“Regular Clearing Cycle” - clearing cycle starting at 6:00am and ending at 5:30pm ET.

“Request for Standard vs Mini Offset” - the request by a Clearing Member, in the form prescribed by CDCC, to offset one (1) or more Long Position(s) on a Standard Contract against the equivalent number of Short Positions on the corresponding Mini Contract (totaling the same quantity of the Underlying Interest in accordance with the ratio prescribed in the Contract Specifications of the Mini Contract), having the same Delivery Month and booked in the same Clearing Member’s account, or the other way around.

“Running Repurchase Transaction” - a Repurchase Transaction in respect of which the Open Leg has already settled at the time of the relevant report.

“Secured Website” - Clearing Members only secured web site that requires a sign on and password, where CDCC publishes Operational Notices as well as documents that are meant only for the Clearing Members.

“Specific Deposit” - a Put Escrow Receipt, a Call Underlying Interest Deposit or a Futures Underlying Interest Deposit which are accepted by CDCC as Underlying Interest Equivalent to cover a specific Short Position.

“Standard Contract” - a Future or Option in relation to which a Mini Contract exists.

“Tenderer” - a Clearing Member that holds a Short Position in a particular Series of Futures and submits a Tender Notice, or is deemed to do so in accordance with the Rules, to CDCC.

“Unsettled Item” - any delivery of the Underlying Interest that has not been settled at the Central Securities Depository.

“(Fixed Income) Variation Margin Account” - the CDCC record provided to each Clearing Member containing all Margin deposits made by such Clearing Member to CDCC for (Fixed Income) Net Variation Margin Requirement purposes only, in accordance with Section D-607 of the Rules, or otherwise as set forth in Section 8-1 hereof.

“Weekly Options” - Options that expire on any Friday, other than Expiry Friday. Only monthly Options expire on Expiry Friday.

[...]

[Section 2 - Time Frames]

SETTLEMENT TIME FOR EVERY BUSINESS DAY

Activity	Time Frames	Activity Type
Start of Settlement Day at CDS and Clearing Day at CDCC	5:30 a.m.	System Activity
Beginning of Business Day Clearing Day and Overnight Clearing Cycle	8:00 p.m. (t-1)	System Activity
Clearing Member's (excluding LCMs) Overnight Margin Calculation & Notification	Every hour from 9:00 p.m. (t-1) to 5:00 a.m. (t)	System Activity/Notification
Deadline to settle Overnight Margin Call	1 hour after notification	Obligation Deadline
Beginning of Settlement Day at CDS	5:30 a.m.	System Activity
End of Overnight Clearing Cycle	6:00 a.m.	System Activity
Beginning of Regular Clearing Cycle	6:00 a.m.	System Activity
Clearing Member's (excluding LCMs) Activity/Notification	7:15 a.m.	System
Early Morning Intra-Day Margin Calculation & Notification		
Deadline to settle Early Morning Intra-Day Margin Call for Clearing Members (excluding LCMs)	1 hour after notification	Obligation Deadline
Assets Concentration Limits breach notification	7:30 a.m.	Notification
Deadline for Clearing Members (excluding LCMs) for Settlement Time with respect to payments for overnight settlement	7:45 a.m.	Obligation Deadline
Fixed Income Transactions - Netting Cycle Timeframe in respect of any Pending Settlement Requirements - 15 minutes cycle	8:30 a.m.	System Activity
Deadline for Clearing Members (excluding LCMs) to receive EOD Amount due from CDCC	8:45 a.m.	Obligation Deadline
Deadline for LCMs for Settlement Time with respect to payments for overnight settlement	9:00 a.m.	Obligation Deadline
Fixed Income Transactions - Morning Netting Cycle Timeframe in respect of any Pending Payment Against Delivery Requirements (Morning Net Payment Against Delivery Requirements sent to CDS for settlement during the Morning Net DVP Settlement Timeframe) - 15 minutes cycle	10:00 a.m.	System Activity
Morning Net DVP Settlement Calculation	10:15 a.m.	System Activity
Deadline for Morning Net DVP Settlement	10:30 a.m.	Obligation Deadline

Activity	Time Frames	Activity Type
Clearing Member's (excluding LCMs) Morning Intra-Day Margin Calculation & Notification Activity/Notification	10:30 a.m.	System
Deadline to settle Morning Intra-Day Margin Call for Clearing Members (excluding LCMs)	1 hour after notification	Obligation Deadline
Assets Concentration Limit breach correction deadline	11:45 a.m.	Obligation Deadline
Fixed Income Transactions - Netting Cycle Timeframe in respect of any Pending Settlement Requirements - 15 minutes cycle	12:15 p.m.	System Activity
Clearing Member's Afternoon Intra-Day Margin Calculation & Notification Activity/Notification	12:45 p.m.	System
Deadline to settle Afternoon Intra-Day Margin Call for Clearing Members (excluding LCMs)	1 hour after notification	Obligation Deadline
Specific Deposits (same day withdrawal)	12:45 p.m.	Operational Deadline
Deadline to settle Intra-Day Margin Call and Additional Margins for LCMs	The later of 2:45 p.m. or 2 hours after notification	Obligation Deadline
Fixed Income Transactions - Netting Cycle Timeframe in respect of any Pending Settlement Requirements - 15 minutes cycle	2:00 p.m.	System Activity
Cash CAD Deposits - \$10,000,000 and under (same day deposit)	2:45 p.m.	Operational Deadline
Cash CAD Deposits - over \$10,000,000 (2 Business Days notice)	2:45 p.m.	Operational Deadline
Cash CAD withdrawal requests - \$10,000,000 and under (same day withdrawal)	2:45 p.m.	Operational Deadline
Cash CAD withdrawal requests - over \$10,000,000 (2 Business Days notice)	2:45 p.m.	Operational Deadline
Fixed Income Transactions - (Same Day Transactions) - Submission Cut-Off Time	3:30 p.m.	Operational Deadline
Clearing Members (excluding LCMs) - All assets Assets deposits other than cash (Margin deposits)	Operational Deadline	3:30 p.m.
Clearing Members - All assets Assets withdrawal requests other than cash (Margin deposits) for same day withdrawal	3:30 p.m.	Operational Deadline
Clearing Members - All assets Assets substitution requests other than cash (Margin deposits) for same day substitution	3:30 p.m.	Operational Deadline
<u>Foreign currency withdrawal requests deadline</u>	<u>3:30 p.m.</u>	<u>Operational</u>

Activity	Time Frames	Activity Type
Fixed Income Transactions - Afternoon Netting Cycle Timeframe in respect of any Pending Settlement Requirements (Afternoon Net DVP Settlement Requirements sent to CDS for settlement by End of Day DVP Settlement Time) - 5 minutes cycle	3:35 p.m.	System Activity
CDS Payment Exchange, Net Wire Payment	4:00 p.m.	System Activity
End of Day DVP Settlement Time	4:00 p.m.	Obligation Deadline
Unsettled Item (Options Underlying deliveries only): Confirmation of settled items to be sent to CDCC	4:15 p.m.	Operational Deadline
Deadline for CDCC to respond to substitution or withdrawal request (other than (Fixed Income) Variation Margin)	4:30 p.m.	Obligation Deadline
OTCI (other than Fixed Income Transactions) - Trade Submission Deadline	4:30 p.m.	Operational Deadline
Projected Margin Report Computation	4:30 p.m.	System Activity
Request for Standard vs Mini Offset	5:00 p.m.	Operational Deadline
Position Transfers	5:25 p.m.	Operational Deadline
Same Day and T+1 Trade corrections	5:30 p.m.	Operational Deadline
Open Position changes	5:30 p.m.	Operational Deadline
Futures - Tender Notices submission	5:30 p.m.	Operational Deadline
Options - Exercise Notices submission	5:30 p.m.	Operational Deadline
Fixed Income Transactions and Futures contracts on Acceptable Securities - Netting Cut Off Time (Netted settlement instructions (Net Delivery Requirements and Net Payment Against Delivery Requirements) sent to CDS for settlement on the next business day)	5:30 p.m.	System Activity
<u>End of Regular Clearing Cycle and</u> CDCC Clearing Application shutdown - Close of Business	5:30 p.m.	System Activity
FIFO: Daily reporting by Clearing Members of the Long Positions in each of their accounts in chronological order	5:30 p.m.	Operational Deadline
FIFO: Submission of Tender Notices	5:30 p.m.	Operational Deadline
LCM Only - All assets Assets deposits other than cash (in respect of all Margin requirements)	6:30 p.m.	Operational Deadline
Fixed Income Transactions - available (next Business Day start)	7:00 p.m.	System Activity

[Section 7 - Settlement]

~~Overnight~~End of Day Settlement

Payments for ~~overnight~~end of day settlement (Futures mark-to-market, premiums, Margin shortfalls, etc.) must be received by 7:45 a.m. the next Business Day for each Clearing Member (excluding LCMs) and 9:00 a.m. for each LCM.

If a payment is late, CDCC will notify the Clearing Member that it is being fined. The fine structure is as follows:

Based on a rolling thirty days - if there has been a prior occurrence within the preceding thirty days, it is the second occurrence.

The fine schedule described below is subject to the Escalation Procedure applicable for operational issues detailed in Section 11 of this Manual.

[...]

[Section 8 - Margin processing]

MARGIN FUND ACCOUNT

Margin Fund Account is the CDCS record provided to each Clearing Member containing all Margin deposited by such Clearing Member to CDCC, in respect of such Clearing Member's Base Initial Margin (or Adjusted Base Initial Margin, as the case may be), Additional Margin for Market Liquidity Risk, Additional Margin for Specific Wrong-Way Risk, Additional Margin for Mismatched Settlement Risk, Additional Margin for Intra-Day Variation Margin Risk, Additional Margin for Unpaid Option Premium Exposure Risk, Additional Margin for Banking Holiday Risk, Additional Margin for Variation Margin Delivery Risk, Additional Capital Margin Risk, Additional Margin for Uncovered Risk of Limited Clearing Members, Variation Margin for Options, and Variation Margin for Unsettled Items, in accordance with the Risk Manual and as set forth in Section 8-1 hereof.

In addition to the foregoing, an amount may be requested from a Clearing Member for the protection of the Corporation, Clearing Members or the investing public, in accordance with section A-702 of the Rules.

Each Clearing Member must record in its Margin Fund Account any deposit made to cover the shortfalls resulting from the requirements. Deposits must be in the form of Eligible Collateral, as specified in the Risk Manual, in an amount sufficient, taking into account the market value and applicable haircuts as specified in Section A-707.

Withdrawals

Clearing Members may request to withdraw any surplus amount from the Margin Fund Account, subject to applicable deadlines, as set forth in Section 2 of this Operations Manual. CDCC will respond within the specified time set forth in Section 2 and, on a best effort basis, approve the withdrawal in CDCC Clearing Application.

Substitutions

A Clearing Member may request to substitute a specific CUSIP/ISINAsset previously pledgeddeposited in the Margin Fund Account to the Corporation. The Clearing Member must first pledge deposit equivalent securities/cash and withdraw the existing securities/cash subject to substitution. The value of the equivalent securities/cash so pledgeddeposited must be equal to or in excess of the securitiesAssets being withdrawn, subject to applicable deadlines, as set forth in Section 2 of this Operations Manual.

CDCC verifies the validity of each deposit made by Clearing Members and ensures that withdrawals of existing securitiesAssets subject to substitution do not create deficits in the Clearing Member's Margin Fund Account. CDCC will respond within the specified time set forth in Section 2 and, on a best effort basis, approve the substitution in CDCC Clearing Application.

Cash deposit

Cash deposited in the Margin Fund Account must be sent to the relevant CDCC bank account. After performing all the validation processes, CDCC confirms within the CDCC Clearing Application the Clearing Member's deposits and/or withdrawals.

Deposits, withdrawals and changes thereto will be reflected on the immediately following Business Day's Deposits and Withdrawals Report (MA01). In accordance with the Rules, any discrepancies that the Clearing Member notices against its own records should be reported to CDCC immediately.

Pledging (Securities / CDS)

Securities pledges in the Margin Fund Account must be performed through CDSX in CDCC's account. The entries on the pledging screen of the CDCC Clearing Application are matched by CDCC to corresponding entries on the reporting system of the relevant Central Securities Depository.

In some cases an exchange of document at a CDCC Office by the Clearing Member (accompanied by a screen print of the entry bearing the Clearing Member's stamp) may be accepted by CDCC as constituting a physical deposit or withdrawal.

After performing all the validation processes, CDCC confirms within the CDCC Clearing Application the Clearing Member's deposits and/or withdrawals.

Deposits, withdrawals and changes thereto will be reflected on the immediately following Business Day's Deposits and Withdrawals Report (MA01). In accordance with the Rules, any discrepancies that the Clearing Member notices against its own records should be reported to CDCC immediately.

Pledging (Securities / Tri Party - Securities Account with an Approved Custodian)

Subject to certain conditions, the Corporation may allow Clearing Members to pledge non-cash collateral for the purpose of meeting their Margin requirements pursuant to Rule A-7 (excluding Net Variation Margin Requirements and any other Margin which can otherwise only be cash settled) to a securities account maintained at a third party securities intermediary. The securities intermediary must enter into an Account Control Agreement with respect to the securities account and be an Approved Custodian, each as defined in the Rules.

Use of the Securities Account

1. The securities account shall only be maintained by a securities intermediary which is an Approved Custodian, as defined in the Rules.
2. Any securities held in the securities account maintained by the Approved Custodian, in the name of the Clearing Member, shall be subject to an Account Control Agreement.
3. The Account Control Agreement is a standard agreement that meets certain requirements, as prescribed in the Rules.
4. The securities account may not be used for Net Variation Margin Requirements or for settlement purposes.
5. The respective rights and obligations of the Clearing Member and CDCC with respect to the securities collateral held in the securities account are subject to the Rules, including:
 - a. All deposits, withdrawals and substitutions in the securities account are subject to the timeline described in Section 2 of this Manual and to the collateral policy described in Section 2 (Eligible Collateral) of the Risk Manual;
 - b. All deposits, withdrawals and substitutions made in the securities account shall also be entered in CDCC Clearing Application in accordance with the timeline described in Section 2 of this Manual and to the collateral policy described in Section 2 (Eligible Collateral) of the Risk Manual;
 - c. Any withdrawal of securities held in the securities account is subject to CDCC's approval. The withdrawal must be entered in CDCC Clearing Application by the Clearing Member. A withdrawal authorization form signed by the Clearing Member must be transmitted to CDCC and must include the Clearing Member's approved stamp. CDCC will then, within the specified time to respond to a withdrawal request specified in Section 2, sign and transmit the withdrawal authorization form to the Custodian to proceed with the withdrawal;
 - d. Any substitution is subject to the deposit by the Clearing Member of the replacement securities in the securities account before the withdrawal of the replaced securities. Both the deposit and the withdrawal shall also be entered in CDCC Clearing Application by the Clearing Member. A substitution authorization form signed by the Clearing Member must be transmitted to CDCC and must include the Clearing Member's approved stamp. CDCC will then, within the specified time to respond to a

substitution request specified in Section 2, sign and transmit the substitution authorization form to the Custodian to proceed with both the deposit and the withdrawal.

Intra-Day Margin Calls

CDCC encourages its Clearing Members to cover Intra-Day Margin Calls with collateral other than cash.

The fine schedule described below is subject to the Escalation Procedure applicable for operational issues detailed in Section 11 of this Manual.

Clearing Members (excluding LCMs) have one (1) hour from notification to cover an Intra-Day Margin Call. If the payment or delivery is late, the following fines shall apply:

- if the payment or delivery is received more than 1 hour after but less than 1 hour and 15 minutes from notification, CDCC will impose a \$500 fine.
- if the payment or delivery is received more than 1 hour and 15 minutes but less than 1 hour and 30 minutes from notification, CDCC will impose a \$1,000 fine.
- if the payment or delivery is not received by 1 hour and 30 minutes from notification, CDCC will deem the Clearing Member (excluding LCMs) a Non-Conforming Member.

LCMs have two (2) hours from notification or until such Settlement Time as may be provided in Section 2 to cover an Intra-Day Margin Call. If the payment or delivery is late, the following fines shall apply:

- if the payment or delivery is received more than 2 hours after but less than 2 hours and 15 minutes from notification, CDCC will impose a \$500 fine.
- if the payment or delivery is received more than 2 hours and 15 minutes but less than 2 hours and 30 minutes from notification, CDCC will impose a \$1,000 fine.

if the payment or delivery is not received within 2 hours and 30 minutes from notification, CDCC will deem the LCM a Non-Conforming Member

Overnight Margin Calls

CDCC offers its Clearing Members two (2) ways to cover Overnight Margin Calls:

- Foreign currencies deposited through an approved correspondent bank;
- Securities pledged through CDS during the overnight online access (see CDS document “PLEDGE AND SETTLEMENT PROCEDURES” section 1.8).

Clearing Members (excluding LCMs) have one hour from notification to cover an Overnight Margin Call. If the payment or delivery is late or insufficient, the Clearing Member may be deemed a Restricted Clearing Member by CDCC and the following fines shall apply:

- if the payment or delivery is received more than 1 hour after but less than 1 hour and 15 minutes from notification, CDCC will impose a \$500 fine.
- if the payment or delivery is received more than 1 hour and 15 minutes but less than 1 hour and 30 minutes from notification, CDCC will impose a \$1,000 fine.

[...]

[Section 11 - Escalation procedure]

PAYMENT FAILURE ESCALATION PROCEDURE

A failure by a Clearing Member to meet a payment, transfer, deposit, delivery, or acceptance of delivery when such obligation becomes due under the Rules (for the purpose of this Section 11 - Escalation Procedure, a "Payment Failure") as a result of an operational issue, including any material systems failure, malfunction, or delay encountered by a Clearing Member or its securities intermediary, including its Settlement Agent, Approved Depository, or Approved Custodian, (an "Operational Issue") shall be managed by the Corporation in accordance with the following procedure, (the "Escalation Procedure").

1) Communication

a) For the purposes of ~~this~~the Payment Failure Escalation Procedure:

- i) a CDCC Level 1 contact shall be a Director Operations, or its equivalent;
- ii) a CDCC Level 2 contact shall be a Vice-President Operations, or its equivalent;
- iii) a CDCC Level 3 contact shall be the President and Chief Clearing Officer or Vice-President and Chief Risk Officer;
- iv) a Clearing Member Level 1 contact shall be a Director of Operations, or its equivalent;
- v) a Clearing Member Level 2 contact shall be a Vice-President Operations, or its equivalent; and
- vi) a Clearing Member Level 3 contact shall be a senior executive reporting directly to the president of the Clearing Member, or to its equivalent in the absence of a senior executive of the Clearing Member bearing the title "president".

b) The CDCC Level 1 contact shall, immediately upon acquiring actual knowledge or confirmation of a Payment Failure by a Clearing Member, notify the Clearing Member Level 1 contact of the Payment Failure. The Clearing Member Level 1 contact shall, within a reasonable period of time, confirm the nature of the issue that caused the Payment Failure and, promptly upon providing such confirmation, proceed to provide the Corporation with the required information in accordance with the Operational Issue Resolution Notice defined below.

c) In the event that (i) the Clearing Member Level 1 contact fails to respond to the CDCC Level 1 contact within a reasonable period of time, (ii) the Clearing Member Level 1 contact cannot confirm the nature of the issue that caused the Payment Failure, or (iii) the information provided by the Clearing Member Level 1 contact regarding the nature of the Operational Issue that caused the Payment Failure is deemed unsatisfactory by the Corporation, the CDCC Level 2 contact shall immediately contact the Clearing Member Level 2 contact. The Clearing Member Level 2 contact shall, promptly upon being contacted in accordance with this subsection, proceed to provide the Corporation with the required information in accordance with the Operational Issue Resolution Notice defined below.

d) In the event that (i) the CDCC Level 2 contact fails to reach the Clearing Member Level 2 contact within a reasonable period of time, (ii) the Clearing Member Level 2 contact cannot confirm the nature of the Operational Issue that caused the Payment Failure, or (iii) the information provided by the Clearing Member Level 2 contact regarding the nature of the Operational Issue that caused the Payment Failure is deemed unsatisfactory by the Corporation, the CDCC Level 3 contact shall immediately contact the Clearing Member Level 3 contact. The Clearing Member Level 3 contact shall, within an hour after being contacted in accordance with this subsection, proceed to provide the Corporation with the required information in accordance with the Operational Issue Resolution Notice defined below.

2) Operational Issue Resolution Notice

a) Upon receiving notification by the Corporation of the Payment Failure in accordance with Section 1 of this Escalation Procedure, if the Clearing Member Level 1, 2, or 3 contact, as the case may be, confirms in accordance with Subsection 1 that the Payment Failure is solely due to an Operational Issue, such Clearing Member Level 1, 2, or 3 contact, as the case may be, shall provide the Corporation with a written confirmation of the nature of the Operational Issue that caused the Payment Failure and a detailed description of the steps proposed to be taken by the Clearing Member to resolve the Operational Issue (together, the "Operational Issue Resolution Notice"). Where the Operational Issue affects the Clearing Member's securities intermediary (including its Settlement Agent, Approved Depository or Approved Custodian), the Clearing Member shall immediately provide the Corporation with the contact details for the relevant representative of such securities intermediary's and include such representative in every communication with the Corporation related to the Operational Issue until the full resolution of the Operational Issue.

b) The Operational Issue Resolution Notice shall be re-issued by the Clearing Member Level 3 contact, to the Corporation on each day on which the Payment Failure persists, until there is a full resolution of the Operational Issue to the satisfaction of the Corporation.

3) Mitigation Tools

Immediately upon the occurrence of a Payment Failure, the Clearing Member shall use its best efforts to resolve the Operational Issue, and to mitigate the Payment Failure by the use of the following mitigation tools (the "Mitigation Tools") before 3:45 pm, where necessary:

- a) The Exception Process Request after the start of CDS payment exchange, where applicable, or
- b) The Payment Delay Request.

4) Delayed Resolution

On any Business Day on which an Operational Issue Resolution Notice remains in effect, in the event that the Corporation is of the view that the Operational Issue is expected, or likely, to persist until the next following Business Day,

a) The Corporation may determine that no Transaction shall be cleared by the Corporation for such Clearing Member until resolution; and

b) The Clearing Member Level 3 contact shall provide written confirmation that the Payment Failure is solely due to an Operational Issue and that the Clearing Member has used its best efforts to use the Mitigation Tools, and requests, if necessary, no later than 3:45 pm on the Business Day on which the first notification of the Payment Failure has been made, by a Payment Delay Request that the Corporation funds the Clearing Member's obligations of payment to the Corporation until the next following Business Day. The Clearing Member shall, upon request by the Corporation, represent and warrant to each of the Corporation's lender, acknowledging and confirming that each of the Corporation and the lender is relying on such representations and warranties without independent inquiry, that the Payment Failure is solely due to an Operational Issue and that no financial condition is affecting the Clearing Member in such a way that the provision of temporary funding in accordance with this section could jeopardize the interest of the Corporation or other Clearing Members. In the event that temporary funding is provided in accordance with this section, all fees and costs incurred by the Corporation in connection with such funding shall be added to and become part of the payment obligation owed by the Clearing Member to the Corporation and will become due immediately.

5) Non-Conforming

a) If no Mitigation Tool has been successfully implemented by the Clearing Member by the end of the Business Day on which the first notification of the Payment Failure has been made, the Corporation may declare the Clearing Member a Non-Conforming Member provided that the President & Chief Clearing

Officer (or its designate) of the Corporation, prior to such designation, notifies the appropriate senior officer of the Bank of Canada in accordance with the Bank of Canada communication requirements.

b) If a Mitigation Tool has successfully been used by the Clearing Member but the Corporation is not satisfied with the information provided pursuant to the Operational Issue Resolution Notice, or considers that the steps proposed to be taken by the Clearing Member to resolve the Operational Issue expose the Corporation to an unacceptable level of risk, the Corporation may declare the Clearing Member a Non-Conforming Member, provided that the President & Chief Clearing Officer (or designate) of the Corporation prior to such designation notifies the appropriate senior officer of the Bank of Canada in accordance with the Bank of Canada communication requirements. The Corporation shall not exercise this discretion without having first performed the Escalation Procedure pursuant to Section 11 within a reasonable timeframe upon acquiring actual knowledge or confirmation of a Payment Failure by a Clearing Member and will not exercise this discretion before 10:00 am on the day following the receipt of the Level-3 Operational Issue Resolution Notice, unless the Clearing Member has not confirmed that the Payment Failure results from an Operational Issue.

OVERNIGHT UNCOVERED RISK EXPOSURE

During the Overnight Clearing Cycle, CDCC's risk appetite for acceptable levels of uncovered risk are measured every hour on a per Clearing Member basis as a proportion of their Margin requirements, and will therefore take the form of a relative threshold (the "Threshold") The first monitoring snapshot occurs at 9:00 pm ET (t-1) and the last one at 5:00 am ET, where the Margin requirement is systemically updated with movements in Initial Margin, but only updated once with movements in Variation Margin¹ (at the 1:00 am ET monitoring snapshot). The hourly monitoring of both the Initial Margin and Variation Margin is available and used to estimate the build-up of credit exposure (the "Live margin check").

The Threshold will only apply if at least one position movement is captured during the Overnight Clearing Cycle, allowing the Clearing Member to be considered inactive as long as positions remain static ("Position-based trigger"). In other words, a Clearing Member will be considered inactive until one position movement is captured, after which such Clearing Member will be considered active for the rest of the Overnight Clearing Cycle.

The Threshold will trigger different actions depending on the Clearing Member's established overnight collateral solution (i.e. Pre-funding solution or Payment solution, see additional details in section 12-1 below). Consequently, CDCC uses the following terminology for the Threshold:

- "Margin Call threshold" - Applicable to the Payment solution. If the Clearing Member reaches the Margin Call threshold, an Overnight Margin Call is issued and needs to be fulfilled within the given timeline. If the Clearing Member doesn't fulfill its payment obligation or the payment capabilities are not enough to fulfill the obligation, CDCC may deem such Clearing Member as a Restricted Clearing Member.
- "Trading threshold" - Applicable to the Pre-funding solution. If the Clearing Member reaches the Trading threshold, CDCC may deem such Clearing Member as a Restricted Clearing Member.

Additionally, CDCC will use the below terminology to address Live margin check breaches:

- "Warning threshold" - Should only the Live margin check be breached, a warning is communicated to the Clearing Member.

Overnight Uncovered Risk Exposure Escalation procedure:

- a) the Overnight contact list for the purposes of the "Overnight Uncovered Risk Exposure" Escalation Procedure:

¹ Additional Margin for Intra-Day Variation Margin Risk as set forth in the Risk Manual.

- i) a CDCC Level 1 contact shall be an Operations Specialist, its equivalent or higher;
 - ii) a CDCC Level 2 contact shall be a Senior Manager, its equivalent or higher;
 - iii) a CDCC Level 3 contact shall be the President or Chief Clearing Officer or Vice-President and Chief Risk Officer;
 - iv) a Clearing Member Level 1 contact shall be an Operation Specialist, its equivalent or higher;
 - v) a Clearing Member Level 2 contact shall be a Senior Manager, its equivalent or higher; and
 - vi) a Clearing Member Level 3 contact shall be a senior executive reporting directly to the president of the Clearing Member, or to its equivalent in the absence of a senior executive of the Clearing Member bearing the title “president”.
- b) The CDCC Level 1 contact shall, immediately upon acquiring confirmation of a Warning threshold breach by a Clearing Member, notify the Clearing Member Level 1 contact of the “Warning threshold” breach.
- c) The CDCC Level 1 contact shall, immediately upon acquiring confirmation of a Margin Call threshold breach by a Clearing Member, notify the Clearing Member Level 1 contact of the breach and that an Overnight Margin Call will be issued.
- d) The CDCC Level 2 contact shall, immediately upon acquiring confirmation of a Trading threshold breach or that the Clearing Member didn’t fulfill its payment obligation following the issuance of an Overnight Margin Call, notify the Clearing Member Level 2 contact of the situation and that the Clearing Member may be deemed a Restricted Clearing Member by CDCC.
- e) The CDCC Level 3 contact shall, immediately upon acquiring actual knowledge or confirmation that a Clearing Member may be or was deemed a Restricted Clearing Member, communicate with the Clearing Member Level 3 contact.

[New Section 12 - Overnight Clearing Cycle Requirements]

OVERNIGHT CLEARING CYCLE REQUIREMENTS

During the Overnight Clearing Cycle, Clearing Members are assigned to one of the following solution based on their payment capabilities:

- Pre-funding solution (i.e. Overnight Clearing Cycle eligible collateral payment capabilities not available)
- Payment solution (i.e. Overnight Clearing Cycle eligible collateral payment capabilities available)

By default, Clearing Members are considered part of the Pre-funding solution until they demonstrate their ability to meet their obligations towards CDCC from amongst the below list of Overnight Clearing Cycle eligible collateral with respect to the Asian hours, European hours, or both:

- “Asian hours” - i.e. 8:00 pm to 1:00 am ET - in a selection of eligible Non-CAD currencies.
- “European hours” - i.e. 1:00 am to 6:00 am ET - in a selection of eligible Non-CAD currencies or any form of eligible collateral pledged through CDSX.

Clearing Members opting to qualify for the Payment solution during either the Asian hours, European hours or both will automatically be considered as part of the Payment solution at the 1:00 am ET monitoring snapshot (juncture of Asian and European hours).

CDCC will conduct routine testing of the Payment solution from time to time to ensure that operational readiness is maintained by Clearing Members. Should a Clearing Member fail such tests, it will be re-assigned to the Pre-funding solution.

CDCC will allow Clearing Members under the Pre-funding solution to enter the Payment solution at any time after the required certification requirements are passed.



RISK MANUAL

~~JUNE 12, 2020~~

[...]

Section 2 - Eligible Collateral

As set out in Section 1 of the Risk Manual, every Clearing Member shall be obligated to deposit Margin with the Corporation, as determined by the Corporation. Deposits must be made in the form of eligible collateral, as specified in this section, in an amount sufficient, taking into account the market value and applicable Haircuts.

2.1 FORMS OF COLLATERAL

The forms of eligible collateral that may be deposited by or on behalf of a Clearing Member with CDCC, as prescribed in Rule A-6 (Clearing Fund Deposits) and Rule A-7 (Margin requirements), are one or more of the following assets:

- 1) Cash; Canadian dollar (CAD) Cash is the only form of eligible collateral that can be deposited in the Clearing Fund
- 2) Debt Securities
- 3) Valued Securities

CDCC may, on an exceptional and temporary basis at its sole discretion, exclude certain forms of eligible collateral or accept other forms of collateral.

2.2 CASH

Cash amounts are accepted ~~only~~ in Canadian dollars, and a selection of Non-CAD Currencies. CAD Cash is the only form of eligible collateral that can be deposited in the Clearing Fund.

CDCC reviews and publishes the selection of Non-CAD Currencies from time to time, and the Clearing Members are informed of these reviews by written notice.

2.3 DEBT SECURITIES

2.3.1 General Considerations

Debt Securities which fulfill certain minimum criteria may be deemed as an eligible form of collateral.

Acceptance of a Debt Security is conditional on the availability of a price from a source that CDCC determines to be acceptable and reliable.

CDCC establishes, reviews and publishes the list of eligible Debt Securities on a regular basis.

Irrespective of the fact that a Debt Security fulfils all eligibility criteria, CDCC will not accept as collateral from or on behalf of a Clearing Member any Debt Security issued or guaranteed by the Clearing Member itself or its Affiliates.

2.3.2 Types of Debt Securities

The Debt Security must be a debt instrument having a fixed and unconditional principal amount.

The coupon rate of the debt instrument must be fixed. Zero coupon bonds are eligible.

Furthermore, real return bonds can be eligible for a specific issuer as determined by CDCC on the list of eligible Debt Securities.

The Debt Security must not have an embedded option or carry a right of conversion into equity securities, with the exception of non-financial calls (i.e. “Canada Call”).

Saving Bonds, floating rate notes, stripped coupons and residual securities are excluded.

2.3.3 Types of Issuers

The eligible Debt Securities must be issued or guaranteed by the Government of Canada, by a provincial government or by the United States (“U.S.”) Government.

2.3.4 Eligible Debt Securities by Issuer

2.3.4.1 Debt Securities issued by the Government of Canada:

- Treasury bills, bullet bonds and real return bonds.

2.3.4.2 Debt Securities guaranteed by the Government of Canada:

- Treasury bills, bullet bonds and Debt Securities issued by Canada Housing Trust.

2.3.4.3 Debt Securities issued by a provincial government:

- Treasury bills and bullet bonds issued by the governments of Alberta, British Columbia, Manitoba, Ontario and Quebec.

2.3.4.4 Debt Securities guaranteed by a provincial government:

- Bullet bonds issued by Financement Quebec, Hydro-Quebec and Ontario Electricity Financial Corporation.

2.3.4.5 Debt Securities issued by the U.S. Government

- Treasury bills, notes, bonds, and Treasury inflation-protected securities (TIPS).

2.3.5 Settlement Procedures

Debt Securities must be transferable in book-entry form using CDSX of CDS Clearing and Depository Services Inc.

2.3.6 Currency of Denomination

Debt Securities must be denominated in Canadian dollars with the exception of Debt Securities issued by the U.S. Government denominated in U.S. dollars.

2.4 VALUED SECURITIES

2.4.1 General Considerations

CDCC accepts Valued Securities trading on the Toronto Stock Exchange or the TSX Venture Exchange.

Irrespective of the fact that a Valued Security fulfils all eligibility criteria, CDCC will not accept as collateral from or on behalf of a Clearing Member any Valued Security issued or guaranteed by the Clearing Member itself or its Affiliates.

No value will be recognized for a Valued Security whose closing price is below \$10 per share.

2.4.2 Settlement Procedures

Valued Securities must be transferable in book-entry form using CDSX of CDS Clearing and Depository Services Inc.

2.4.3 Currency of Denomination

Valued Securities must be denominated in Canadian dollars.

2.5 RISK CONTROL MEASURES

2.5.1 General Considerations

The CDCC collateral framework takes a conservative approach to manage the forms of eligible collateral accepted. The framework includes, but is not limited to, risk limits and calculation of Haircuts that apply to the different forms of eligible collateral.

2.5.2 Risk Limits

2.5.2.1 Limits at the Clearing Member Level

- Except for the Variation Margin account, for each acceptable Government Debt Security, excluding Treasury bills, a concentration limit equal to \$250 million or 10% of the total issue outstanding, whichever is less, is applied to each Clearing Member.
- Valued Securities issued or guaranteed by the Clearing Member or its Affiliates are not eligible.
- Valued Securities issued by the TMX Group are not eligible.

2.5.2.2 Limit on the Clearing Fund Account

For each Clearing Member, for all of its accounts combined, 100% of the Clearing Fund Requirements must be covered by CAD Cash.

2.5.2.3 Limit on the Margin Requirements¹

For each Clearing Member, for all of its accounts combined, at least 25% of the Margin requirements must be covered by CAD Cash, acceptable Treasury bills and bonds issued or guaranteed by the Government of Canada or any combination thereof valued after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 40% of the Margin requirements may be covered by Debt Securities issued by the United States of America Federal Government after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 50% of the Margin requirements may be covered by provincial issued or guaranteed Debt Securities after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 20% of the Margin requirements may be covered by Debt Securities issued or guaranteed by the province of Alberta after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 20% of the Margin requirements may be covered by Debt Securities issued or guaranteed by the province of British Columbia after the application of Haircuts.

¹ This excludes the Net Variation Margin Requirement.

For each Clearing Member, for all of its accounts combined, no more than 20% of the Margin requirements may be covered by Debt Securities issued or guaranteed by the province of Manitoba after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 30% of the Margin requirements may be covered by Debt Securities issued or guaranteed by the province of Ontario after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 30% of the Margin requirements may be covered by Debt Securities issued or guaranteed by the province of Quebec after the application of Haircuts.

For each Clearing Member, for all of its accounts combined no more than 15% of the Margin requirements may be covered by Valued Securities after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, no more than 5% of the Margin requirements may be covered by any one Valued Security after the application of Haircuts.

For each Clearing Member, for all of its accounts combined, risk limits in proportion of the Margin requirements may be covered by Non-CAD Currencies after the application of Haircuts. CDCC reviews and publishes risk limits attributable to Non-CAD Currencies from time to time, and the Clearing Members are informed of these reviews by written notice.

2.5.2.4 Limit on the Variation Margin Account

For each Clearing Member, for all of its accounts combined, 100% of the Net Variation Margin Requirement must be covered by acceptable Treasury bills and bonds issued or guaranteed by the Government of Canada, Government of Alberta, Government of British Columbia, Government of Ontario and Government of Quebec or any combination thereof after the application of Haircuts.

CDCC shall, on an exceptional basis, acting reasonably, accept CAD cash or other securities as collateral to cover the Net Variation Margin Requirement.

2.5.3 Limits at CDCC Level

For each acceptable Valued Security, a concentration limit of 5% of the free float applies at CDCC level.

2.6 HAIRCUTS

2.6.1 Haircuts for Non-CAD Currencies

The Corporation calculates the Haircuts based on historical daily returns of the foreign exchange risks. The volatility estimator uses the exponentially weighted moving average (“EWMA”) approach as defined in Appendix 6.2, and the assumption that the Non-CAD currency can be liquidated at a reasonable price in “n” days (“n” is determined according to the applicable basket of currencies and prevailing market conditions).

In addition, the final Haircut applied for Non-CAD Currencies is calculated as the maximum daily haircut computed over the last 5 years and over the applicable basket of currencies considered by the Corporation.

Once the quantitative analysis is performed, CDCC reserves the right to increase the Haircuts based on qualitative criteria, acting reasonably.

2.6.1.2.6.2 Haircuts for Government Securities

The Corporation calculates the Haircuts based on any of the following criteria:

- Valuation of the market, credit, liquidity and foreign exchange risks based on historical daily returns;
- The volatility estimator uses the exponentially weighted moving average (“EWMA”) approach as defined in Appendix 6.5, and the assumption that the bond can be liquidated at a reasonable price in “n” days. (“n” is determined according to the type of products and prevailing market conditions). In addition, a floor for the EWMA volatility estimator is calculated as the 25th percentile of a daily EWMA volatility estimator observed over the last 10 years;
- Liquidity risk valued according to the bid-ask spread of the issues using the same EWMA volatility estimator and the floor (if this spread is unavailable, the liquidation window will be expanded and will depend on market conditions);
- Bonds of the same issuer and comparable maturities.

Once the quantitative analysis is performed, CDCC reserves the right to increase the Haircuts based on qualitative criteria, such as:

- Comparative analysis of CDCC’s Haircuts in relation to the Haircuts of the Bank of Canada;
- Comparative analysis of CDCC’s Haircuts in relation to the Haircuts of other clearing houses;
- The congruence of the different Haircuts to the credit rating spreads of the different issuers; and

- Any other factor considered relevant by CDCC, acting reasonably.

2.6.22.6.3 The Haircuts for Valued Securities

A Haircut of 50% is applied to all Valued Securities pledged against the total Margin requirement for all accounts combined.

2.6.32.6.4 Haircuts Policy

CDCC reviews and publishes the Haircuts from time to time, and the Clearing Members are informed of these reviews by written notice.

[...]



DEFAULT MANUAL

~~APRIL 6, 2018~~

[...]

3.5 LIQUIDITY MANAGEMENT

While not a source of capital available for the offset of losses, the Corporation has available an array of liquidity facilities, which it may, at its discretion, call upon to assist with the funding of its loss mitigation activities. In the event of a default, the Corporation must make a determination as to how to deploy these resources. Included among its alternatives are:

- Drawing upon the Corporation's commercial bank liquidity lines, in whole or in part.
- Raising liquidity through outright sales and/or Repurchase Transactions involving Securities of the defaulting Clearing Member.
- Raising liquidity through the sale of non-Cad currencies pledged by the defaulting Clearing member
- Raising liquidity through the exercise of its rights of re-pledging/re-hypothecation of suspended Clearing Member's Margin Deposits (including without limitation Margin and Clearing Fund deposits).
- Raising liquidity through the exercise of its rights of re-pledging/re-hypothecation of surviving Clearing Members' Clearing Fund Requirements.

[...]