Risk Management Framework: Commodity Derivatives Segment

- **Margins**

1. Initial Margin

a. Computation of Initial Margin

ICCL shall use the Standard Portfolio Analysis of Risk ("SPAN[1]") methodology for the purpose of real time risk management.

The Initial Margin requirement is based on a worst scenario loss of a portfolio of an individual client comprising his positions in options and futures contracts on the same underlying across different maturities and across various scenarios of price and volatility changes. ICCL imposes initial margins sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. The Initial Margin requirements is set so as to provide coverage of at least a 99% single-tailed confidence interval of the estimated distribution of future exposure over at least a 2 day time horizon. ICCL shall estimate the appropriate Margin Period of Risk ("MPOR") for each product based on liquidity in the product and scale up the initial margins, if required.

The client-wise margins are grossed across various clients at the Trading / Clearing Member level. The proprietary positions of the Trading / Clearing Member are treated as that of a client (net basis).

The margins levied to members are levied and collected in INR.

b. Portfolio Based Margining

The parameters involved in a portfolio based margining approach include-

b.i. Worst Scenario Loss

The worst case loss of a portfolio is calculated by valuing the portfolio under several scenarios of changes in the price and volatility. The scenarios to be used for this purpose would be:

Risk Scenario Number	Price Move in Multiples of Price Range	Volatility Move in Multiples of Volatility Range	Fraction of Loss to be Considered
1.	0	+1	100%
2.	0	-1	100%
3.	+1/3	+1	100%
4.	+1/3	-1	100%

[1] *PC-SPAN® is a registered trademark of the Chicago Mercantile Exchange ("CME"), used herein under License. The Chicago Mercantile Exchange assumes no liability in connection with the use of PC-SPAN by any person or entity.*

5.	-1/3	+1	100%
6.	-1/3	-1	100%
7.	+2/3	+1	100%
8.	+2/3	-1	100%
9.	-2/3	+1	100%
10.	-2/3	-1	100%
11.	+1	+1	100%
12.	+1	-1	100%
13.	-1	+1	100%
14.	-1	-1	100%
15.	+2	0	35%
16.	-2	0	35%

The probable premium value at each price scan point for volatility up and volatility down scenarios is calculated and then compared to the theoretical premium value (based on last closing value of the underlying) to determine profit or loss.

The maximum loss under any of the sixteen scenarios is referred to as the Worst Scenario Loss.

b.ii. Price Scan Range

The Price Scan Range ("PSR") is the probable price change over a one-day period. PSR would be specified by ICCL from time to time. The PSR is referred to in standard deviation/ sigma terms. The standard deviation (volatility estimate) shall be computed using the Exponentially Weighted Moving Average method ("EWMA").

The estimate at the end of time period t (σt) shall be estimated using the volatility estimate at the end of the previous time period. i.e. as at the end of t-1 time period (σt-1), and the return (rt) observed in the futures market during the time period t.

The volatility estimated at the end of the day's trading would be used in calculating the initial margin calls at the end of the same day.

The formula shall be as under:

$$\sigma_t^2 = \lambda(\sigma_{t-1})^2 + (1-\lambda)(r_t)^2$$

Where:

- λ is a parameter which determines how rapidly volatility estimates changes. The value of λ is currently fixed at 0.94.
- σ (sigma) means the standard deviation of daily returns in the futures market.
- "Return" is defined as the logarithmic return: rt = ln (St/St-1) where St is the price at time t.

b.iii. *Volatility Scan Range*

The Volatility Scan Range ("VSR") is the amount by which the implied volatility is changed in each risk array scenario. The VSR is referred to in percentage terms.

The PSR and VSR for generating the scenarios would be as below or such other percentage as may be specified by ICCL from time to time.

Sr. No.	Particulars	PSR	VSR
Futures			
1	Commodity Derivatives	3.5 sigma	NA

c. Initial Margin Requirement

The initial margin is deducted from the liquid assets of the clearing member on an online, real time basis. The initial margin shall be subject to minimum initial margin for derivatives on various underlying commodities, as given in the table below:-

Sr. No.	Particulars	Minimum Initial Margin
1	Nickel	5.00%
2	Other Commodities	4.00%

2. Extreme Loss margin

The extreme loss margin is deducted from the liquid assets of the clearing member on an online, real time basis.

Sr. No.	Particulars	Extreme Loss Margin
Futures		
1	Commodity Derivatives	1% on gross open positions

3. Crystallised Loss Margin

The Crystallised Loss Margin ("CLM") is levied to cover the risk arising out of accumulation of crystallised obligations incurred on account of intra-day squaring off of positions. The intra-day crystallised losses are monitored and the CLM is blocked by ICCL from the free collateral on an online real-time basis only for those transactions which are subject to upfront margining. Crystallised losses are offset against crystallised profits at a client level, if any.

4. Spread margin

ICCL shall provide spread margin benefit in the following cases:

a) Different expiry date contracts of the same underlying

and

b) Two contracts variants having the same underlying commodity

ICCL shall charge minimum 25% of the initial margin on each of the individual legs of the spread. Maximum benefit in initial margin on spread positions shall be restricted to 75%. Benefit in initial margin shall be permitted only when each individual contract in the spread is from amongst the first three expiring contracts. Margin benefit on spread positions shall be withdrawn latest by the start of tender period or the start of expiry day, whichever is earlier.

In case of such spread positions additional margins shall not be levied. No benefit in ELM shall be provided for spread positions i.e. ELM shall be charged on both individual legs. ICCL may charge margins higher than the minimum specified depending upon its risk perceptions.

c) Futures contracts in a commodity complex

ICCL shall provide spread benefit in initial margin across futures contracts in a commodity complex provided the following conditions are met:

- Minimum coefficient of correlation (r) between futures prices of the two commodities is 0.90.
- Back testing for adequacy of spread margin to cover MTM has been carried out for a minimum period of one year (back testing for at least 250 days wherein daily settlement price of futures used for back testing have been determined from traded futures prices).
- Initial margin after spread benefit has been able to cover MTM on at least 99% of the days as per back testing.

Maximum benefit in initial margin on spread positions is restricted to 50%. Benefit in initial margin shall be permitted only when each individual contract in the spread is from amongst the first three expiring contracts. Margin benefit on spread positions shall be withdrawn latest by the start of tender period or the start of expiry day, whichever is earlier.

In case of such spread positions additional margins shall not be levied. No benefit in ELM shall be provided for spread positions i.e. ELM shall be charged on both individual legs. ICCL may charge margins higher than the minimum specified depending upon its risk perceptions.

ICCL shall continuously monitor dynamics of the commodities and their correlation and if there are changes such that spread margin benefit is no longer appropriate to be given, take appropriate further course of action.

5. Tender Period Margin

ICCL may levy Tender period/Pre-expiry margin which shall be increased gradually every day beginning from the pre-determined number of days before the expiry of the contract as applicable. ICCL shall determine the quantum of tender period margin as appropriate based on the risk characteristics of the particular commodity. Tender Period Margin shall be applicable on both buy and sell side.

6. Delivery Period Margin

Delivery Margin is levied on the long and short positions marked for delivery till the pay-in is completed by the Clearing Member. Once delivery period margin is levied, all other applicable margins may be released.

It is levied till the time the member makes pay in of funds to collect delivery. Delivery Period margin is exempted if goods have been tendered with all the documentary evidence.

Delivery period margins shall be higher of:

- 3% + 5 day 99% VaR of spot price volatility
  Or
- 25%

ICCL may impose higher delivery period margin based on the risk characteristics of the particular commodity.

7. Additional and Special Margin

In case of additional volatility, an additional margin (on both buy & sell side) and / or special margin (on either buy or sell side) at such percentage, as deemed fit; will be imposed in respect of all outstanding positions. Such margins shall be imposed over and above the other margins specified by ICCL and shall be collected in any form of collateral or in Cash only as may be prescribed by ICCL/BSE/SEBI from time to time.

8. Additional Ad-hoc Margins

As a risk containment measure, ICCL may require clearing members to pay additional margins as may be decided from time to time. This shall be in addition to the aforementioned margins, which are or may have been imposed from time to time.

However, the ICCL shall only levy additional margins post consideration of the following factors:

- Additional risk management measures (like ad-hoc margins) shall normally be required only to deal with circumstances that cannot be anticipated or were not anticipated while designing the risk management system. If ad-hoc margins are required to be imposed with any degree of regularity, ICCL shall examine whether the circumstances that give rise to such margins can be reasonably anticipated and can therefore be incorporated into the risk management system mandated by SEBI. ICCL shall analyse such situations and bring the matter to the attention of SEBI for further action.

- Any additional margins that ICCL may impose shall be based on objective criteria and shall not discriminate between members on the basis of subjective criteria.

9. Concentration margins

ICCL may impose adequate concentration margins (only on concentrated positions) to cover the risk of longer period required for liquidation of concentrated positions in any commodity. The threshold value for imposing concentration margin may be determined taking into account factors including open interest, concentration and estimated time to liquidation based on prevailing liquidity and possible reduction in liquidity in times of market stress etc. The quantum of concentration margins imposed may vary based on the level of concentration.

10. Updation of risk parameters

The ICCL SPAN risk management parameters shall be updated at Beginning-of-Day, End-of-Day and at intervals not exceeding 2 hours during the trading hours.

11. Enforcement and Collection of Margins

Aforesaid margins are computed at a client level portfolio and grossed across all clients (including the proprietary positions of member) at the member level. Margins are collected/adjusted upfront from the liquid assets of the Clearing Members on an on-line real time basis.

12. Measures in case of repeated shortfall in margin/pay-in:

In case of repeated margin/pay-in shortfalls beyond a threshold amount by any member in a month, following risk mitigation measures shall be initiated by ICCL:

- The member shall be put in square off mode and required to reduce positions.
- The member shall be charged initial margins at a higher rate for the next one month,
  Or
- The member shall be subjected to a penal exposure free deposit equal to the cumulative funds/margin shortage over previous one month which could be kept with ICCL for the next month.
- ICCL shall closely monitor such member.

13. Mode of payment of Margin

Clearing members shall provide for margin in any one or more of the eligible collateral modes as specified by ICCL. The margins shall be collected/adjusted from the liquid assets of the member on a real time basis.

14. Mark to market settlement

The mark to market gains and losses shall be settled in cash before the start of trading on T+1 day. If mark to market obligations are not collected before start of the next day's trading, ICCL shall collect correspondingly higher initial margin to cover the potential for losses over the time elapsed in the collection of margins. All open positions of a futures contract shall be settled daily, only in cash, based on the Daily Settlement Price ("DSP"). DSP shall be reckoned and disseminated by ICCL at the end of every trading day.

15. Risk Reduction Mode

The entry and exit threshold is detailed below:

- Clearing Members: Put in RRM at 90% collateral utilisation & moved back to normal mode when utilisation goes below 85%.
- Trading Members: Put in RRM at 90% utilisation of trading limit assigned by their Clearing Members & moved back to normal mode when limit utilisation goes below 85%.

Core Settlement Guarantee Fund and Default Waterfall

1. Objective of Core SGF

ICCL maintain a fund called Core SGF for each segment of each Recognised Stock Exchange ("SE") to guarantee the settlement of trades executed in respective segment of the SE. In the event of a clearing member (member) failing to honour settlement commitments, the Core SGF shall be used to fulfil the obligations of that member and complete the settlement without affecting the normal settlement process.

2. Minimum Required Corpus

Minimum Required Corpus of Core SGF ("MRC") for each segment of each stock exchange is subject to the following:

a. The MRC remains fixed for a month.
b. By 15th of every month, ICCL reviews and determines the MRC for next month based on the results of daily stress tests of the preceding month. (For example, by 15th February, ICCL determines the MRC for March based on results of various stress tests conducted in January). ICCL also reviews and determine by 15th of every month, the adequacy of contributions made by various contributors and any further contributions to the Core SGF required to be made by various contributors for the next month.
c. For every day of the preceding month (i.e., January as per example in (b) above), uncovered loss numbers are estimated by the various stress tests for credit risk conducted by ICCL for the segment and highest of such numbers is taken as worst case loss number for the day.
d. Average of all the daily worst case loss numbers determined in (c) above is calculated.
e. The MRC for next month (i.e., March as per example in (b) above is the higher of the average arrived in at step (d) above and the segment MRC as per previous review (i.e., review done on 15th January for the month of February).
f. Minimum threshold value of MRC for commodity derivatives segment of any stock exchange shall be INR 10 Crores.

3. Contribution to Core SGF

At any point of time, the contributions of various contributors to the Core Settlement Guarantee Fund ("Core SGF") of any segment shall be as follows:

a. Clearing Corporation contribution:

ICCL's contribution to the Core SGF shall be at least 50% of the Minimum Required Corpus ("MRC"). ICCL shall make this contribution from its own funds. ICCL contribution to Core SGF shall be considered as part of its net worth.

b. Stock Exchange contribution:

Stock Exchange contribution to the Core SGF shall be at least 25% of the MRC (can be adjusted against transfer of profit by Stock Exchange as per Regulation 33 of SECC Regulations).

c. Clearing Member primary contribution:

If ICCL wishes, it can seek risk based contribution from Clearing Members ("CMs") of the segment (including custodial clearing members) to the Core SGF subject to the following conditions:

- that total contribution from CMs shall not be more than 25% of the MRC,
- that no exposure shall be available on Core SGF contribution of any CM (exposure free collateral of CM available with ICCL can be considered towards Core SGF contribution of CM), and
- that required contributions of individual CMs shall be pro-rata based on the risk they bring to the system.

ICCL shall have the flexibility to collect CM primary contribution either upfront or staggered over a period of time. In case of staggered contribution, the remaining balance shall be met by ICCL to ensure adequacy of total Core SGF corpus at all times. Such ICCL contribution shall be available to ICCL for withdrawal as and when further contributions from CMs are received.

Any penalties levied by ICCL (as per Regulation 34 of SECC Regulations) shall be credited to Core SGF corpus.

Interest on cash contribution to Core SGF shall also accrue to the Core SGF and prorate attributed to the contributors in proportion to their cash contribution. ICCL may accept CM contribution in the form of Cash Collateral and Bank Fixed Deposits. ICCL shall adhere to specific guidance which may be issued by SEBI from time to time in this regard.

4. Management of Core SGF

The Defaulter's Committee/SGF utilization Committee of the Clearing Corporation shall manage the Core SGF.

ICCL shall follow prudential norms of Investment policy for Core SGF corpus and establish and implement policies and procedures to ensure that Core SGF corpus is invested in highly liquid financial instruments with minimal market and credit risk and is capable of being liquidated rapidly with minimal adverse price effect.

The instruments in which investments may broadly be made are Fixed Deposit with Banks (only those banks which have a net worth of more than INR 500 Crores and are rated A1 (or A1+) or equivalent, Treasury Bills, Government Securities and money market/liquid mutual funds subject to suitable transaction/investment limits and monitoring of the same. ICCL shall further ensure that the financial instruments in which the Core SGF corpus is invested remain sufficiently diversified at all times.

5. Access to Core SGF

ICCL may utilise the Core SGF in the event of a failure of member(s) to honour settlement commitment.

6. Further contribution to / Recoupment of Core SGF

Requisite contributions to Core SGF by various contributors for any month shall be made by the contributors before start of the month. In the event of usage of Core SGF during a calendar month, contributors shall, as per usage of their individual contribution, immediately replenish the Core SGF to MRC.

In case there is failure on part of some contributor(s) to replenish its (their) contribution, same shall be immediately met, on a temporary basis during the month, in the following order:

a. By ICCL
b. By SE

7. Default Waterfall

The default waterfall of ICCL for any segment shall generally follow the following order –

a. Monies of defaulting member (including defaulting member's primary contribution to Core SGF(s) and excess monies of defaulter in other segments).
b. Insurance, if any.
c. ICCL resources (equal to 5% of the segment MRC).
d. Core SGF of the segment in the following order:
   - Penalties
   - ICCL contribution to the extent of at least 25% of the segment MRC
   - Remaining Core SGF: ICCL contribution, Stock Exchange contribution and non-defaulting members' primary contribution to Core SGF on pro-rata basis.
e. Proportion of remaining ICCL resources (excluding ICCL contribution to core SGFs of other segments and INR 100 Crore) equal to ratio of segment MRC to sum of MRCs of all segments.
f. ICCL/SE contribution to Core SGFs of other segments (after meeting obligations of those segments) and remaining CC resources to that extent as approved by SEBI.
g. Capped additional contribution by non-defaulting members of the segment.
h. Any remaining loss to be covered by way of pro-rata haircut to pay-outs.