



THEORETICAL INTERMARKET MARGIN SYSTEM
(TIMS)

Risk Based Haircuts (RBH) and
Customer Portfolio Margin (CPM) User Guide

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Theoretical Intermarket Margin System Overview

The Risk Based Haircut (RBH) and Customer Portfolio Margin (CPM) methodologies may be used to calculate theoretically based capital charges as set forth within SEA net capital rule 15c3-1 and customer account margin requirements as set forth in FINRA Rule 4210. TIMS applies option pricing theory and portfolio theory to positions involving listed options for the computation of capital charges and margin requirements.

Under this risk based method, option pricing theory is utilized to project portfolio liquidating values under various potential market scenarios. Portfolios may consist of positions in options, stocks, futures, and options on futures with offsets provided between positions on the same underlying instrument or on different highly correlated underlying instruments. Option positions can include equity, index and currency products. In customer portfolio margin accounts futures, other than stock futures, and currency options are not permitted.

OCC utilizes several pricing models depending on the product being priced. For American style options a proprietary derivation of the Cox-Ross-Rubinstein binomial option pricing model is used to calculate projected liquidating prices. For European style options a Black Scholes model is used. Projected prices are calculated based upon the closing underlying asset price for each day with plus and minus price moves at ten equidistant data points over a broad range of market movement.

For broker-dealers other than non-clearing specialists and/or market makers, the appropriate percentages of the daily market price of the underlying are +/-15% for equities, narrow-based indexes, and non-high capitalization diversified indexes, +/-10% for high capitalization diversified indexes, +/-6% for major market foreign currencies, and +/-20% for all other currencies. For non-clearing specialists, market makers, and customers, the percentages of the daily market price of the underlying are +/-15% for equities and narrow-based indexes, +/-8% for high capitalization diversified indexes, and +/-10% for non-high capitalization diversified indexes. For market maker accounts +/-4.5% is the market move percentage for major market foreign currencies and +/-20% for all other currencies.

The implied volatility curve is specific to an option's underlying security and maturity and is unchanged at potential market scenarios in the calculation of projected prices for that option. Interest rates reflect inter-bank swap rates. And, dividends are input as reported by an outside vendor with the most recently reported frequency and amount assumed to be carried forward.

Prices for all instruments are projected, and the resulting profits and losses of the portfolio are summed to estimate the projected aggregate gain or loss at the underlying price move.

Profit and loss values are aggregated first at the class group level, then the product group level, and finally at the portfolio group level, if the positions are part of product groups that is contained in a portfolio group.

A Class Group contains options, futures, and equities relating to the same underlying instrument. Within a class group 100% of a position's gain at any one valuation point is allowed to offset another position's loss at the same valuation point.

Other offsets are provided within product groups and portfolio groups. A Product Group contains class groups whose underlying securities exhibit a high degree of historical price change correlation. Product groups are comprised of closely related broad-based index or sector index class groups. Portfolio groups consist of closely related product groups. Not all product groups are contained in a portfolio group.

In the case of index options and related instruments where offset by a qualified stock basket is available (as defined in Appendix A of the net capital rule), there will be a 95% offset between the basket and the net gains and losses of the class group. A minimum charge of 5% of the market value of the basket for high capitalization indexes or 7.5% of the market value of the basket for non-high capitalization indexes will be applied in the event that the net risk is less than the minimum charge.

The largest projected loss for the entire class group, product group, or portfolio group over the range of ten potential market scenarios is the required risk charge for a portfolio.

To account for liquidation risk, a minimum charge of \$0.25 per contract for noncustomers and \$0.375 for customers multiplied by the contract multiplier is applied when the class, product, or portfolio group reflects less market exposure than the group's total minimum charge.

OCC computes and makes available the theoretical profit and loss values for all listed option series, OCC cleared futures, OCC cross margined products, and the related underlying instruments on a daily basis. An accounts' open positions and the theoretical values can be combined to compute the appropriate margin requirement or capital charge.

RBH and CPM Documents

Documentation, products lists, parameters, and other information related to the RBH and CPM programs can be found on the Risk Based Haircuts Documentation page of the OCC website.

<http://www.optionsclearing.com/risk-management/rbh/documentation.jsp>

Product Group Parameters

For a current list of product groups and parameters being used by the OCC for RBH, please see the RBH Offsets Matrix file at

<http://www.optionsclearing.com/risk-management/rbh/documentation.jsp>

For a current list of product groups and parameters being used by the OCC for CPM, please see the CPM Parameters file at

<http://www.optionsclearing.com/risk-management/cpm/>

Valid Basket Codes

For the valid basket codes being used by the OCC, please see the Valid RBH & CPM Basket Codes file at

<http://www.optionsclearing.com/risk-management/rbh/documentation.jsp>

OCC Contact List

Member Services Help Desk:

(800) 544-6091
MemberServices@theocc.com

General OCC:

(800) 621-6072 (in the US)
(800) 424-7230 (in Canada)
(312) 322-6200 (outside the US)

Options Industry Services:

1.888.678.4667
(1.888.OPTIONS)
options@theocc.com

Pricing and Margins:

PricingandMargins@theocc.com

OCC Profit & Loss Values File Descriptions

Types of Profit & Loss Values Files

OCC is the provider of profit & loss values for the Risk Based Haircut and Customer Portfolio Margin methodologies used to calculate Theoretical Intermarket Margin System and margin requirements.

Risk Based Haircut (RBH) and Customer Portfolio Margin (CPM) users can acquire the profit/loss data via an NDM or FTP+ transmission consisting FIXML files of profit & loss values, contract data, prices, and calculation parameters. Contact the OCC in order to acquire the files.

FIXML File Description

OCC provides FIXML Risk Based Haircut/Customer Portfolio Margin output files for nightly download. For record layout, message structures, samples, and data service mappings please see the ENCORE DDS Guide at:

http://www.optionsclearing.com/components/docs/membership/dds_ref/ENCORE_DDS_RBHCPM.pdf

Position File Record Description

In order to match and account's positions with the profit and loss values, a position file must be created. The position file record description which follows describes the records that are contained within a position file. Compliance with this record layout is suggested in order to facilitate rule compliance auditing to be completed by exchanges and other regulators. Also, the record layout which follows is the format that must be used with the OCC Portfolio Margin Calculator which is available from Risk Management page of the OCC website. (<http://www.optionsclearing.com/risk-management/rbh/documentation.jsp>)

Position Header Record

NAME OF FIELD	CHARACTER DESCRIPTION	START/ END	DESCRIPTION
TRANS-ID	N,R,ZERO 3	1/3	This field will always be '346'.
RECORD-TYPE	AN,L,BLANK 1	4/4	'H' for header record.
CLEARING MEMBER NUMBER	N,R,ZERO 4	5/8	Clearing Member Number.
DATE	AN,L,BLANK 8	9/16	This field represents the date the file was produced and is in CCYYMMDD format.

Detail Record

NAME OF FIELD	CHARACTER DESCRIPTION	START/ END	DESCRIPTION
TRANS-ID	N,R,ZERO 3	1/3	This field will always be '346'.
RECORD-TYPE	AN,L,BLANK 1	4/4	' ' for detail record. The space must also be included for this field in .CSV files for PMC.
CLEARING FIRM NUMBER	N,R,ZERO 4	5/8	Carrying Broker/Dealer identifier
ACCOUNT ID	AN,L,BLANK 10	9/18	The identifier which has been assigned to an account to uniquely identify that customer.
PUT/CALL INDICATOR	AN,L,BLANK 1	19/19	A put or call indicator (P-PUT, C-CALL) will be included for all option products. For future and ETF/stock positions this field will be blank.
SYMBOL	AN,L,BLANK 6	20/25	Option (do not include OPRA code), ETF/stock or futures trading symbol. Included for all products.
FMS EXCHANGE	AN,L,ZERO 4	26/29	FMS (Foreign Marginable Securities) exchange MIC code is required for FMS stocks and options.
EXERCISE STYLE	AN,L,BLANK 1	30/30	An exercise style indicator (A-American, E-European) will be required for OTC options contracts. For future and ETF/stock positions this field will always be blank
SETTLEMENT STYLE	AN,L,BLANK 1	31/31	A settlement style indicator (C-Settle On Close, O-Settle On Open) will be required for OTC option contracts. For future and ETF/stock positions this field will always be blank.

NAME OF FIELD	CHARACTER DESCRIPTION	START/ END	DESCRIPTION
SERIES / CONTRACT DATE	N,L,ZERO 8	32/39	The date on which the options or future expires. Format is CCYYMMDD.
EXPIRATION DATE	N, L, BLANK, 8	40/47	Required only for OTC options contracts. Format is CCYYMMDD.
STRIKE PRICE	N,R,ZERO 9(5.4)	48/56	For an option the strike dollar amount. The field will be zero for future and ETF/stock security types.
FUNCTION	AN,L,BLANK 1	57/57	This represents whether a position is long or short. The valid codes are: 'L' for long, 'S' for short.
SECURITY TYPE CODE	AN,L,BLANK 1	58/58	This represents the security type for the position. The valid codes are: 'O' for Option 'I' for Option on Future 'F' for Future 'S' for ETF/stock 'X' for Currency Spot (Symbol must correspond to an RBH currency future.)
MARKET VALUE^	N,R,ZERO 12(6.6)	59/70	The per share closing price for stocks/ETFs. This field is optional as the price will be read from the P/L file.
NET POSITION	N,R,ZERO 9	71/79	The position quantity.
INTERVAL DISTINCTION ID	AN,L,BLANK 1	80/80	Set to 'C' for customer, 'F' for broker/dealer, and 'M' for non-clearing specialist/market maker positions.
BASKET ID*	AN,L,ZERO OR BLANK 5	81/85	This field is used to identify stock positions which comprise a hedging basket.

CHARACTER DESCRIPTION LEGEND:

AN - Alphanumeric, the field can be a combination of letters and numbers.

N - Numeric, the field must be a number.

R - Right Justify, the field is justified to the right.

L - Left Justify, the field is justified to the left.

ZERO - The field is padded with zeros.

BLANKS - The field is padded with blanks.

Numeric fields (N) in this user guide are described as Nx(y.z) where x is the total number of digits in the field; y is the number of integer digits; and z is the number of decimal digits. For example, "N18(11.7)" represents an eighteen digit number with eleven integers and seven decimals.

*Refers to Valid Basket Codes which are available at http://www.optionsclearing.com/products/rbh_documentation.jsp

^ This field should be divided by 1,000,000 in order to align the decimal point (i.e. 122.50 = 000122500000)

Trailer Record

NAME OF FIELD	CHARACTER DESCRIPTION	START/ END	DESCRIPTION
TRANS-ID	N,R,ZERO 3	1/3	This field will always be '346'.
RECORD-TYPE	AN,L,BLANK 1	4/4	'T' for trailer record.
CLEARING MEMBER NUMBER	N,R,ZERO 4	5/8	Clearing Member Number.
TOTAL LONGS	N,R,ZERO 11	9/19	Total of long net position values found on every detail record.
TOTAL SHORTS	N,R,ZERO 11	20/30	Total of short net position values found on every detail record.

Note: Character Description Legend is on the following page

CHARACTER DESCRIPTION LEGEND:

AN - Alphanumeric, the field can be a combination of letters and numbers.

N - Numeric, the field must be a number.

R - Right Justify, the field is justified to the right.

L - Left Justify, the field is justified to the left.

ZERO - The field is padded with zeros.

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Numeric fields (N) in this user guide are described as Nx(y.z) where x is the total number of digits in the field; y is the number of integer digits; and z is the number of decimal digits. For example, "N18(11.7)" represents an eighteen digit number with eleven integers and seven decimals.

^ This field should be divided by 1,000,000 in order to align the decimal point.

Theoretical Intermarket Margin System Calculations

Key Components

- Firm Open Positions - Positions to be used in the TIMS calculations. The description of the position file is in this user guide.
- Profit/Loss Values - The projected aggregate gain or loss at each of the ten equidistant data points which represent the underlying price move.
- Scenarios - Scenarios are each of the 10 underlying price points. The P&L value at each price point is multiplied with the position quantity resulting in 10 profit/loss scenarios for the position.
- Class Group - A combination of products that derive their value from the same underlying security or index.
- Product Group - A combination of class groups that have highly correlated underlying instruments. Gains and losses of included class groups may be offset at a certain percentage.
- Portfolio Group - A combination of product groups whose gains and losses may be offset.
- Offset Percentage - The percentage of offset calculated between a position's gain at any one valuation point and a closely related position's loss at the same valuation point.
- Minimum Charge - This charge is used to account for liquidation risk in low risk portfolios. It is the minimum requirement for each option or future.
- Basket Minimum - The percentage of a stock basket's net market value that is lowest risk amount required for the basket.
- Risk Charge - The largest projected portfolio loss over the market scenarios at the relevant level of totaling (portfolio, product, or class group).
- Net Minimum Charge- The sum of each position minimum haircut aggregated at the class, product, or portfolio level.
- Account Requirement - The greater of the Risk Charge and the Minimum Charge.

Calculate Profit/Loss Scenarios

Options, Futures, and Stocks

For options (equity, index, or future), futures, and stock positions that are not a part of a basket, apply the appropriate profit/loss values to the position quantity to calculate per contract a potential profit/loss scenario:

$$\text{Profit/Loss Scenario}^N = (\text{Profit/Loss Value}^N \text{ times Quantity})$$

Where:

- Quantity is equal to the position quantity: positive for long and negative for short positions.
- N relates to each profit/loss scenario that is calculated based on one of the 10 equidistant projected price moves. (N=1...N=10)
- Profit/Loss Value is equal to each of the ten PROFIT/LOSS VALUE fields found on the PROFIT/LOSS VALUE RECORD. Ten values exist per record.

Baskets

For Stock positions that are a part of a basket, the calculation is as follows:

$$\text{Profit/Loss Scenario}^N = (\text{Price times Percentage}^N) \text{ times (quantity)}$$

Where:

- Price is equal to the current market value.
- Percentage is equal to the product group market move per each of the 10 equidistant price moves. See Basket Stock Moves described below.
- Quantity is equal to the position quantity: positive for long and negative for short positions
- N relates to each profit/loss scenario that is calculated based on one of the 10 equidistant projected price moves. (N=1...N=10)

Basket Stock Moves:

- Each individual basket stock profit/loss must be calculated using the corresponding market move percentages of the related index/class group being processed. To accomplish this, match the BASKET ID from the position to the PRODUCT GROUP RECORD field called PRODUCT GROUP that corresponds to the class group of the basket ID.
 - If a match is not found, verify the BASKET ID and contact the OCC to report an error. See the OCC Contact List.

- If a match is found use the PRODUCT GROUP field to match to the PRICE MOVE RECORD field associated with the PRODUCT GROUP ID.
- If a match is found the percentages are equal to the +/- 10 MOVE PERCENTS of the product group.

Currency Spots and Forwards

- Match a position to the PROFIT/LOSS VALUES RECORD by matching on the SYMBOL field. The position must contain a valid OCC Currency SYMBOL to match to the correct PROFIT/LOSS VALUE RECORD. This record will be used to provide data values required for subsequent steps outlined below.
- If a match is NOT found, contact the OCC to report an error.
- If a match is found, the profit/loss calculation for Currency Spots and Forwards is as follows:

Profit loss scenario^N = (price times percentage^N) times (quantity)

Where:

- Price is equal to the CURRENT MARKET VALUE divided by the SPOT CURRENCY DIVISOR; both values can be found on the PROFIT/LOSS VALUES RECORD matched in a previous step.
- Percentage is equal to the 10 price moves, see special spot/forward information described below
- Quantity is equal to the position quantity
- N relates to each profit/loss scenario that is calculated based on one of the 10 percentages corresponding to 10 equidistant projected price moves. (N=1... N=10)

Special spot/forward information:

- Obtain the PRODUCT GROUP ID for the currency spot or forward contract from the PROFIT/LOSS VALUES RECORD and store for use in selecting the appropriate price move percentages.
 - If a match is found, the percentages are equal to the +/- 10 PRODUCT GROUP PRICE MOVE values
 - If a match is NOT found, use the default +/- 5 CURRENCY PRICE MOVE percentages.

Unmatched Positions

Special information when no match is found on the profit/loss file:

- If there is no match found on the profit/loss file for an Option or Future product, verify the position and if necessary contact the OCC to report an error.
- If there is no match on the profit/loss file for a stock position that is not a part of a basket, the calculation is as follows:

Profit loss scenario^N = (price times percentage^N) times (quantity)

Where:

- Price is equal to the current market value from the position record
- Percentage is equal to the 10 price moves, see special stock info described below
- Quantity is equal to the position quantity, positive for long and negative for short positions
- N relates to each profit/loss scenario that is calculated based on one of the 10 percentages corresponding to 10 equidistant projected price moves (N=1, ... , N=10)

Special stock info:

If the stock is NOT a part of a basket:

- Product group will be equal to the default value of 00999
- The market move Percentage is equal to +/- 5 EQUITY default PRICE MOVE values.

Requirement Calculations

The explanation of the TMS calculations has been segmented into two sections:

1. **Totaling Overview at the Class, Product, and Portfolio Group Levels** - outlines the steps to be taken to calculate the minimum charge, risk charge, and actual charge.
2. **Totaling Calculations** - outlines the individual calculations that are used in the totaling at the different levels: Class, Product, and Portfolio Group. These calculations use the 10 profit/loss scenarios that were calculated for each position, as outlined in the previous section.

Portfolio and product group offset and minimum values to be used in the calculations can be found in the RBH/CPM Parameters File.

Totaling Overview at the Class, Product, and Portfolio Group Levels

Class Group Level Haircut Calculations

- For each Class Group:
 - Calculate Class Group Sum
- At the Class Group Level:
 - Calculate the Minimum Charge Value
 - Calculate the Risk Charge Value
 - Determine the Actual Charge Value
 - Calculate the Product Group Charge
 - Calculate the Account Gross Charge Value

Product Group Level Haircut Calculations

- For each Class Group:
 - Calculate Class Group Sum
- At the Product Group Level:
 - Calculate Product Group Gains
 - Calculate Product Group Losses
 - Calculate Product Group Offset
 - Calculate the Minimum Charge Value
 - Calculate the Risk Charge Value
 - Determine the Actual Charge Value
 - Calculate the Account Gross Charge Value

Portfolio Group Level Haircut Calculations

These calculation steps are for product groups that do have a match on the PORTFOLIO GROUP RECORD.

- For each Class Group:
 - Calculate Class Group Sum
- For each Product Group:
 - Calculate Product Group Gains
 - Calculate Product Group Losses
 - Calculate Product Group Offset
- At the Portfolio Group Level:
 - Calculate Portfolio Group Gains
 - Calculate Portfolio Group Losses
 - Calculate Portfolio Group Offset
 - Calculate the Minimum Charge Value
 - Calculate the Risk Charge Value
 - Determine the Actual Charge Value
 - Calculate the Account Gross Charge Value

Totaling and Offset Calculations

Class Group Sum

Class Group Sum

CALCULATION is a straight sum (adding gains and losses together) for each of the 10 profit/loss amounts calculated for each position within the class group.

$$\text{CLASS GROUP SUM}^N = \sum \text{profit/loss scenario}^{X,N}$$

Where:

- X refers to the number of positions within the class group
- N refers to the profit/loss scenario (N = 1,...,10) corresponding up/down price movements
- Profit/loss scenario is defined in Section IV B.

Stock Basket Total

CALCULATION is a straight sum for the 10 scenarios of the profit/loss amounts calculated for each stock within the basket.

- $\text{CLASS GROUP SUM}^N = \sum \text{profit/loss scenario}^{X,N}$

where:

- X refers to each stock position within the index basket
- N refers to the profit/loss scenario (N = 1,...,10) corresponding up/down price movements
- Profit/loss scenario is defined in Section IV B
- Basket total gains are haircut by 5% prior to offset with class group totals

Product Group Gains, Losses, and Offset

Product Group Gains

CALCULATION is the total of all positive CLASS GROUP SUM values at each of the 10 profit/loss scenarios for each class group within the product group.

$$\text{PRODUCT GROUP GAINS}^N = \text{class group sum}^{N(1)} + \dots + \text{Class group sum}^{N(Y)}$$

Where:

- Y refers to the number of positive class group sum values within the product group at a given profit/loss scenario
- N refers to the profit/loss scenario (N = 1,...,10) corresponding up/down price movements

Product Group Losses

CALCULATION is the total of all negative CLASS GROUP SUM values at each of the 10 profit/loss scenarios for each class group within the product group.

$$\text{PRODUCT GROUP LOSSES}^N = \text{class group sum}^{N(1)} + \dots + \text{Class group sum}^{N(Z)}$$

Where:

- Z refers to the number of negative class group sum values within the product group at a given profit/loss scenario
- N refers to the profit/loss scenario (N = 1,...,10) corresponding up/down price movements

Product Group Offset

Based on the product group gains and losses and the OFFSET value that is found on the PRODUCT GROUP AND BASKET RECORD.

If the $\text{PRODUCT GROUP GAINS}^N \geq (\text{PRODUCT GROUP LOSSES}^N \text{ divided by } \text{OFFSET})$:

$\text{PRODUCT GROUP OFFSET}^N = \text{PRODUCT GROUP GAINS}^N \text{ minus } (\text{PRODUCT GROUP LOSSES}^N \text{ divided by } \text{OFFSET})$

If the $\text{PRODUCT GROUP GAINS}^N < (\text{PRODUCT GROUP LOSSES}^N \text{ divided by } \text{OFFSET})$:

$\text{PRODUCT GROUP OFFSET}^N = (\text{PRODUCT GROUP GAINS}^N \text{ times } \text{OFFSET}) \text{ minus } \text{PRODUCT GROUP LOSSES}^N$

Where:

- N refers to the profit/loss scenario ($N = 1, \dots, 10$) corresponding up/down price movements
- OFFSET -- match the product group from the positions to the PRODUCT GROUP AND BASKET RECORD field called PRODUCT GROUP
 - If a match is found, use the OFFSET value
 - If a match is not found, use the OFFSET from the default record.

Portfolio Group Gains, Losses, Offset

Portfolio Group Gains

CALCULATION is the total of all positive PRODUCT GROUP OFFSET values at each of the 10 profit/loss scenarios for each product group within the portfolio group.

$\text{PORTFOLIO GROUP GAINS}^N = \text{product group offset}^{N(1)} + \dots + \text{product group offset}^{N(Y)}$

Where:

- Y refers to the number of positive product group offset values within the portfolio group at a given profit/loss scenario
- N refers to the profit/loss scenario ($N = 1, \dots, 10$) corresponding up/down price movements

Portfolio Group Losses

CALCULATION is the total of all negative PRODUCT GROUP OFFSET values at each of the 10 profit/loss scenarios for each product group within the portfolio group.

$$\text{PORTFOLIO GROUP LOSSES}^N = \text{product group offset}^{N(1)} + \dots + \text{product group offset}^{N(Z)}$$

Where:

- Z refers to the number of negative product group offset values within the portfolio group at a given profit/loss scenario
- N refers to the profit/loss scenario (N = 1,...,10) corresponding up/down price movements

Portfolio Group Offset

Based on the portfolio group gains and losses and the PORTFOLIO OFFSET value that is found on the PORTFOLIO GROUP RECORD (#5).

If the $\text{PORTFOLIO GROUP GAINS}^N \geq (\text{PORTFOLIO GROUP LOSSES}^N \text{ divided by PORTFOLIO OFFSET})$:

$$\text{PORTFOLIO GROUP OFFSET}^N = \text{PORTFOLIO GROUP GAINS}^N \text{ minus } (\text{PORTFOLIO GROUP LOSSES}^N \text{ divided by OFFSET})$$

If the $\text{PORTFOLIO GROUP GAINS}^N < (\text{PORTFOLIO GROUP LOSSES}^N \text{ divided by PORTFOLIO OFFSET})$:

$$\text{PORTFOLIO GROUP OFFSET}^N = (\text{PORTFOLIO GROUP GAINS}^N \text{ times PORTFOLIO OFFSET}^N) \text{ minus PORTFOLIO GROUP LOSSES}^N$$

Where:

- N refers to the profit/loss scenario (N = 1,...,10) corresponding up/down price movements
- PORTFOLIO OFFSET - match the portfolio group from the positions to the PORTFOLIO GROUP RECORD (#5) field called PORTFOLIO GROUP
 - If a match is found, use the PORTFOLIO OFFSET value
 - If a match is NOT found, use the PORTFOLIO OFFSET from the default record

Minimum Charges

Class Group Minimum Haircut

Total of the quantity from each position times the minimum for each option and future position within the class group.

CLASS GROUP MINIMUM HAIRCUT = (quantity¹ times minimum) + + (quantity^x times minimum)

Where:

- X refers to the number of positions within the class group
- Quantity is always a positive value for both long and short positions
- Minimum is found on the PROFIT & LOSS VALUES RECORD (#6)

There are two minimum requirements on the RBH/CPM Theoretical File. One is for customer positions (CUSTOMER MINIMUM VALUE) and the other for non-customer positions (Noncustomer MINIMUM VALUE). The Interval distinction id on the position record controls this process.

If the extended option price of a long option position is less than the minimum contract value on the profit/loss file use the extended option price in place of the minimum contract value.

The basket minimum is equal to the sum of all stock values within the basket times the percentage taken from the basket minimum percentage field (BSKTMINPCT).

Product Group Minimum Haircut

Equals the total of the CLASS GROUP MINIMUM HAIRCUTs for each class group within the product group.

PRODUCT GROUP MINIMUM HAIRCUT = sum of every CLASS GROUP MINIMUM within the product group

Portfolio Group Minimum Haircut

Equals the total of the PRODUCT GROUP MINIMUM HAIRCUTs for each product group within the portfolio group.

PORTFOLIO GROUP MINIMUM HAIRCUT = sum of every PRODUCT GROUP MINIMUM within the portfolio group

Risk, Actual, Account, Firm Gross Haircut

Risk Charge

VALUE is equal to the largest negative value calculated as follows:

- If totaling at the CLASS GROUP LEVEL
RISK HAIRCUT VALUE = the largest negative CLASS GROUP SUM value
- If totaling at the PRODUCT GROUP LEVEL
RISK HAIRCUT VALUE = the largest negative PRODUCT GROUP OFFSET value
- If totaling at the PORTFOLIO GROUP LEVEL
RISK HAIRCUT VALUE = the largest negative PORTFOLIO GROUP OFFSET value

Actual Charge

VALUE is the largest value of either the RISK CHARGE VALUE or the MINIMUM CHARGE calculated at each specific level of totaling.

- If totaling at the CLASS GROUP LEVEL
ACTUAL CHARGE VALUE = the largest value of either the RISK CHARGE VALUE calculated at this level of totaling or the CLASS GROUP MINIMUM CHARGE
- If totaling at the PRODUCT GROUP LEVEL
ACTUAL CHARGE VALUE = the largest value of either the RISK CHARGE VALUE calculated at this level of totaling or the PRODUCT GROUP MINIMUM CHARGE
- If totaling at the PORTFOLIO GROUP LEVEL
ACTUAL CHARGE VALUE = the largest value of either the RISK CHARGE VALUE calculated at this level of totaling or the PORTFOLIO GROUP MINIMUM CHARGE

Account Gross Charge

VALUE is the total of all ACTUAL CHARGE VALUEs calculated within the account.

Firm Gross Charge

VALUE is the total of all ACCOUNT CHARGE VALUEs calculated within the firm.

Calculation Examples

Following are examples of TIMS calculations.

SHADED AREAS	DESCRIPTION
#1	Product Symbol
#2	Put/Call Code
#3	Expiration (MMYY)
#4	Strike Price
#5	Position Quantity (positive for long and negative for short positions)
#6	Current Market Value
#7 - #16	10 profit/loss scenarios that are based on the 10 percentages corresponding to 10 equidistant projected price moves
#17 - #26	CLASS GROUP SUM totals calculated at each of the 10 price moves, includes totaling for non-Basket Class groups and Basket groups
#27 - #36	PRODUCT GROUP GAINS, LOSSES and OFFSET totals calculated at each of the 10 price moves
#37 - #46	PORTFOLIO GROUP GAINS, LOSSES and OFFSET totals calculated at each of the 10 price moves
#47	TOTAL BASKET VALUE, which is equal to the quantity times the price for each stock in the basket
#48	NET OF 5% GAINS REDUCTION, which is equal to the total of all positive profit/loss scenarios at each projected price move times 95% for all baskets

ACCOUNT NUMBER: ZCYZ

PORTFOLIO GROUP: USIDX

PRODUCT GROUP: 00008

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NDX	P	1195	0600	25	3850.00	29,406	21,853	14,300	10,727	4,714	-3,880	-8,416	-10,572	-15,115	-18,502
NDX	P	1295	0430	300	125.00	-615	-3,033	-5415	-7,800	-10,185	-13,698	-14,790	-15,885	-16,980	-18,075

CLASS GROUP:	000022	17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM		28,791	18,820	8,885	2,927	-5,471	-17,578	-23,206	-26,457	-32,095	-36,577

PRODUCT GROUP:	00008	27	28	29	30	31	32	33	34	35	36
PRODUCT GROUP GAINS		28,791	18,820	8,885	2,927	0	0	0	0	0	0
PRODUCT GROUP LOSSES		0	0	0	0	-5,471	-17,578	-23,206	-26,457	-32,095	-36,577
PRODUCT GROUP OFFSETS		28,791	18,820	8,885	2,927	-5,471	-17,578	-23,206	-26,457	-32,095	-36,577

PRODUCT GROUP: 00009

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
OEX	C	1095	0540	15	1762.50	-20,463	-19,957	-18,536	-15,438	-8,948	8,114	17,349	26,926	35,936	46,279
OEX	C	1095	0545	90	1312.50	-90,711	-89,155	-84,130	-71,754	-41,193	43,531	97,835	149,360	207,025	268,645
OEX	C	1195	0545	-85	1700.00	111,789	107,158	96,836	72,890	43,423	-38,757	-91,394	-134,194	-184,238	-236,668
OEX	C	1195	0550	15	1350.00	-15,084	-14,535	-13,295	-11,040	-5,726	7,090	14,791	22,890	30,588	40,437
OEX	P	1095	0525	11	125.00	22,632	13,923	6,925	3,195	1,077	-591	-630	-881	-1,074	-790
OEX	P	1095	9540	-20	256.25	-65,120	-47,846	-30,412	-17,356	-5,507	2,500	3,172	5,108	5,775	5,810
OEX	P	1095	0545	-92	337.50	-331,750	-251,177	-175,171	-96,220	-43,761	12,837	23,185	30,217	38,387	38,482
OEX	P	1195	0545	57	662.50	192,748	144,083	98,692	58,580	25,946	-8,370	-15,358	-19,769	-27,108	-26,211

CLASS GROUP:	000013	17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM		-195,959	-157,506	-119,091	-77,143	-34,689	26,354	48,950	79,657	105,291	135,984

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SP		1295	0000	-10	0.00	231,780	185,424	139,068	92,712	46,356	-34,767	-69,534	-104,301	-139,068	-173,835
CLASS GROUP: 000018						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						231,780	185,424	139,068	92,712	46,356	-34,767	-69,534	-104,301	-139,068	-173,835
PRODUCT GROUP: 00009						27	28	29	30	31	32	33	34	35	36
PRODUCT GROUP GAINS						231,780	185,424	139,068	92,712	46,356	26,354	48,950	79,657	105,291	135,984
PRODUCT GROUP LOSSES						-195,959	-157,506	-119,091	-77,143	-34,689	-34,767	-69,534	-104,301	-139,068	-173,835
PRODUCT GROUP OFFSETS						14,048	10,417	6,745	6,998	7,813	-11,048	-25,479	-32,610	-44,306	-51,449
PORTFOLIO GROUP: USIDX						37	38	39	40	41	42	43	44	45	46
PORTFOLIO GROUP GAINS						42,839	29,237	15,630	9,925	7,813	0	0	0	0	0
PORTFOLIO GROUP LOSSES						0	0	0	0	-5,471	-28,626	-48,685	-59,067	-76,401	-88,026
PORTFOLIO GROUP OFFSETS						42,839	29,237	15,630	9,925	-1,565	-28,626	-48,685	-59,067	-76,401	-88,026
RISK HAIRCUT						88,026									
PORTFOLIO GROUP MINIMUM HAIRCUT						18,375									
ACTUAL HAIRCUT						88,026									

PRODUCT GROUP: 00076

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TXX	C	1095	0170	-50	75.00	3,733	3,680	3,494	3,026	2,004	-3,954	-9,858	-18,300	-29,498	-43,418
TXX	P	1095	0170	-50	1800.00	-109,568	-86,775	-64,130	-41,818	-20,243	19,065	35,814	50,088	61,707	70,716
CLASS GROUP: 000077						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						-105,835	-83,095	-60,636	-38,792	-18,239	15,111	25,959	31,788	32,209	27,298
PRODUCT GROUP: 00076						27	28	29	30	31	32	33	34	35	36
PRODUCT GROUP GAINS						0	0	0	0	0	15,111	25,956	31,788	32,209	27,298
PRODUCT GROUP LOSSES						-105,835	-83,095	-60,636	-38,792	-18,239	0	0	0	0	0
PRODUCT GROUP OFFSETS						-105,835	-83,095	-60,636	-38,792	-18,239	15,111	25,956	31,788	32,209	27,298
RISK HAIRCUT						105,835									
PRODUCT GROUP MINIMUM HAIRCUT						2,500									
ACTUAL HAIRCUT						105,835									
ACCOUNT GROSS HAIRCUT						193,861									

ACCOUNT NUMBER: ZC2Z
 PORTFOLIO GROUP: BBIDX
 PRODUCT GROUP: 00009

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AA				-2342	58,624	10,984	8,787	6,590	4,394	2,197	-1,648	-3,295	-4,943	-6,590	-8,238
AVP				-890	75,000	5,340	4,272	3,204	2,136	1,068	-801	-1,602	-2,403	-3,204	-4,005
BA				-4440	70,624	25,086	20,069	15,052	10,034	5,017	-3,763	-7,526	-11,289	-15,052	-18,814
OXY				-4151	22,874	7,596	6,077	4,558	3,039	1,519	-1,139	-2,279	-3,418	-4,558	-5,697
XRX				-1368	129,500	14,172	11,338	8,503	5,669	2,834	-2,126	-4,252	-6,378	-8,503	-10,629

BASKET 10013				47	17	18	19	20	21	22	23	24	25	26
STOCK INDEX BASKET TOTAL				-789,723	63,178	50,543	37,907	25,272	12,635	-9,477	-18,954	-28,431	-37,907	-47,383
48	NET OF 5% GAINS REDUCTION				60,019	48,016	36,012	24,008	12,003	-9,477	-18,954	-28,431	-37,007	-47,383

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
OEX	C	1095	0545	10	1312.50	-10,079	-9,906	-9,348	-7,973	-4,577	4,837	10,871	16,596	23,003	29,849
OEX	C	1195	0540	13	2137.50	-21,174	-20,061	-16,983	-13,248	-8,029	6,949	14,376	21,941	29,910	38,645
OEX	P	1095	0545	-10	337.50	-36,060	-27,302	-19,040	-10,459	-4,757	1,395	2,520	3,285	4,173	4,183
OEX	P	1195	0540	-13	537.50	-39,343	-28,582	-18,865	-10,637	-4,095	1,190	2,376	4,171	4,712	5,255
OEX	C	1195	0545	-10	1700.00	13,152	12,607	11,393	8,575	5,109	-4,560	-10,752	-15,788	-21,675	-27,843
OEX	P	1195	0545	10	662.50	33,815	25,278	17,314	10,277	4,552	-1,469	-2,694	-3,473	-4,756	-4,598

						17	18	19	20	21	22	23	24	25	26
INDEX TOTALS						-59,689	-47,966	-35,529	-23,465	-11,797	8,342	16,697	25,732	35,367	45,491

CLASS GROUP: 000013

CLASS GROUP SUM	330	50	483	543	206	-1,135	-2,257	-1,699	-2,540	-1,892
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PRODUCT GROUP: 00009				27	28	29	30	31	32	33	34	35	36
PRODUCT GROUP GAINS				330	50	483	543	206	0	0	0	0	0
PRODUCT GROUP LOSSES				0	0	0	0	0	-1,135	-2,257	-1,699	-2,540	-1,892
PRODUCT GROUP OFFSETS				330	50	483	543	206	-1,135	-2,257	-1,699	-2,540	-1,892
PORTFOLIO GROUP: BBIDX				37	38	39	40	41	42	43	44	45	46
PORTFOLIO GROUP GAINS				330	50	483	543	206	0	0	0	0	0
PORTFOLIO GROUP LOSSES				0	0	0	0	0	-1,135	-2,257	-1,699	-2,540	-1,892
PORTFOLIO GROUP OFFSETS				330	50	483	543	206	-1,135	-2,257	-1,699	-2,540	-1,892
RISK HAIRCUT				2,540									
PORTFOLIO GROUP MINIMUM HAIRCUT				41,136									
ACTUAL HAIRCUT				41,136									

PRODUCT GROUP: 00999

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AVP				-33	72.250	358	286	215	143	72	-72	-143	-215	-286	-358

CLASS GROUP: AVP						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						358	286	215	143	72	-72	-143	-215	-286	-358
RISK HAIRCUT						358									
CLASS GROUP MINIMUM HAIRCUT						0									
ACTUAL HAIRCUT						358									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BA				-14	64.750	136	109	82	54	27	-27	-54	-82	-109	-136

CLASS GROUP: BA						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						136	109	82	54	27	-27	-54	-82	-109	-136
RISK HAIRCUT						136									
CLASS GROUP MINIMUM HAIRCUT						0									
ACTUAL HAIRCUT						136									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BBNK				20	78.625	-236	-189	-142	-94	-47	47	94	142	189	236

CLASS GROUP: BBQ						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						-236	-189	-142	-94	-47	47	94	142	189	236
RISK HAIRCUT						236									
CLASS GROUP MINIMUM HAIRCUT						0									
ACTUAL HAIRCUT						236									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BOL	P	1095	0300	5	25.00	470	327	212	115	54	-35	-62	-82	-95	-105
CLASS GROUP: BBQ						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						470	327	212	115	54	-35	-62	-82	-95	-105
RISK HAIRCUT						105									
CLASS GROUP MINIMUM HAIRCUT						125									
ACTUAL HAIRCUT						125									
RISK HAIRCUT (PRODUCT GROUP LEVEL)						855									
ACCOUNT GROSS HAIRCUT						41,991									

ACCOUNT NUMBER: ZZ1M

PRODUCT GROUP: 00004

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
XDM		0000	0000	100000	697.80	-418,680	-314,010	-251,208	-167,472	-83,736	83,736	167,472	251,208	314,010	418,680
XDM	C	1195	0710	160	581.75	-91,976	-91,925	-87,374	-81,0-18	-15,253	-10,851	-21,078	-31,526	-13,066	9,818
XDM	P	1195	0600	3000	6.25	253,740	153,480	141,090	74,190	32,970	-46,050	-50,280	-53,130	-54,810	-55,440
CLASS GROUP: 00004						17	18	19	20	21	22	23	24	25	26
CLASS GROUP SUM						-256,916	-252,455	-197,492	-174,300	-66,019	26,835	96,114	166,552	246,134	373,058
RISK HAIRCUT						256,916									
CLASS GROUP MINIMUM HAIRCUT						79,000									
ACTUAL HAIRCUT						256,916									
RISK HAIRCUT (PRODUCT GROUP LEVEL)						256,916									
ACCOUNT GROSS HAIRCUT						256,916									
FIRM GROSS HAIRCUT						492,768									

Appendix

Revision History

Version	Date	Author	Version Updates
1.4	07/12/2016	OCC	<ul style="list-style-type: none">• Updated styles and layout• Added Revision History table
1.5	08/16/2016	OCC	<ul style="list-style-type: none">• Updated to reference both RBH and CPM• Removed all flat files descriptions• Added reference to the FIXML files