SPAN for ICE
SPAN Array File Formats for Energy Products

Version 2.5

7 March 2012

1 Introduction

1.1 Background

This document contains details of the format of the SPAN®[1] Array Files published by ICE Clear Europe (the Clearing House) in respect of Energy products.

The Clearing House calculates margins on Energy Futures and Energy OTC products using the SPAN methodology. SPAN was developed by the CME and the Clearing House presently utilises London SPAN Version 4 (London SPAN).

1.2 Final SPAN Array Files

The Clearing House publishes Final SPAN Array files at the end of each business day. The Final SPAN Array File is utilised by the Clearing House to margin Member positions and may be used by Clearing Members to calculate margin on their own Customer accounts and to verify the margin calculation undertaken on their own accounts. The Final SPAN Array files reflect and are based upon the complete and authorised end of day settlement prices for all contracts.

1.3 Early SPAN Array Files

The Clearing House publishes Early SPAN Array files that may be used, under guidance from the Clearing House as a contingency measure in the event that significant end of day processing issues prevents the publication of Final SPAN Array files.

Early SPAN Early Array files are generated on an incremental basis through the evening settlements process and each iteration of the Early file that is generated reflects the latest set of contract prices settled and the arrays associated with those contracts. At any stage prior to finalisation of all settlements, the Early SPAN Array file will reflect an incomplete set of data. The Early SPAN Array file also reflects contract prices prior to the point at which the Clearing House has concluded its price verification process.

Early SPAN Array files should not be utilised within regular operations as these may be incomplete and/or reflect price data not yet approved.

In the event that the Clearing House believes that Members might benefit from use of the Early SPAN Array file, then, the Clearing House will inform Members of the status of data within the current version of the early file and thus Members will be in a position to determine whether they wish to utilise this file rather than suffer further delays to their end of day processing, The Clearing House has also implemented a facility within its own systems that allows recycling of previous day's price data for any contracts for which prices are missing and thus use this data to "complete" the Early SPAN file.

More information regarding publication and use of the early SPAN file can be found on the following circular:

https://www.theice.com/publicdocs/clear_europe/circulars/C110035.pdf

1.4 London SPAN 4 Enhancements

The Clearing House has identified several areas where, in order to optimise and improve calculation of Margin, it will enhance the London SPAN 4 specification.

The methodology for applying Standard SPAN Arrays to positions in order to calculate initial margin is described in the SPAN Technical Information Pack for London SPAN 4. This document may be obtained from the internet.

1.4.1 Position Allocation

The new version of ICE SPAN Arrays incorporates a Position Allocation methodology. This feature will be utilised in the cases of certain products whereby the position is subjected to a transformation into one or more alternate products prior to the application of the existing London SPAN 4 margining logic, i.e. prior to the Scanning Risk calculation step. This change should be regarded as a position pre-processing step and does not require any change to the existing core logic within London SPAN 4.

The implementation within the SPAN Array file, applicable record type and methodology are described later in this document (See 3.1).

Member systems may choose to ignore the Position Allocation records that define the above and thus bypass the position allocations step. However, whilst this will still yield a margin calculation result, that result will be less that

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that calculated when the allocations are applied. This would then result in Members under-margining those clients that hold positions in any products to which position allocation is applied.

If the Member does not have any clients with positions in products to which position allocation applies, then, clearly, ignoring the Position Allocation records will have no impact on margin calculation.

The changes described will be implemented in June/July 2011

1.4.2 Incorporation of Volatility Credit within Inter-Contract Credit Calculations under method 10

Inter Contract Credit Method 10 currently calculates inter-contract credits based on Futures Price Risk. This credit reflects the delta based correlation between the two (or more) contracts to which the credit is applied. This mechanism does not include any credit in respect of volatility correlation in the event that the scanning risk on which this credit is based also comprises correlated volatility risk.

ICE Clear Europe has incorporated a change within the determination of inter-contract credits calculated using Method 10 that will yield a credit in respect of option vega, a Volatility Credit, in addition to the Futures Risk Component.

This change necessitates the calculation/determination of option vega within each inter-contract tier. The vega is "consumed" in a fashion similar to inter-contract tier delta in order to generate a Volatility Credit which is added to the existing Inter-Contract Credit for that Inter-Contract Spread.

1.5 SPAN Array Formats

The Clearing House currently publishes SPAN array files for Energy Products in two formats: SP5 and CSV format.

- ☐ SP5 is a fixed record length format and is compatible with various third party software applications including CME PC-SPAN.
- ☐ CSV is a Comma Separated Value format and is not inherently limited by field width restrictions.
- ☐ The enhancements that are described in 1.4 will be implemented in both the CSV format file and in the SP5 format file.

The Clearing House SPAN for ICE margining tool supports all SPAN Arrays published by ICE Clear Europe.

2 General

2.1 File Naming and Download Locations

The file naming convention for these files varies according to the location from which they are downloaded. The following table summarises the naming convention based upon publishing location:

		ICE Web Site	ICE AFTS	CME Ftp Site
		https://www.theice.com/SpanFiles.shtml?iceClearEurope=	Via https: https://euafts.theice.com User: euspan Password: euspan Via sftp: euspan@euafts.theice.com Password: euspan	ftp://ftp.cmegroup.com/pub/span/data/ice/
Final	SP5	IPE*MMDD*F.SP5 ZIP archive named **IPE*MMDD*F.SP5.ZIP**.	Naming as per Web Site	**Ice.*YYYYMMDD*.pa5** contained in a ZIP archive named **ice.*YYYYMMDD*.pa5.zip**. E.g. ice.20091005.pa5.zip.
	CSV	IPE*MMDD*F.CSV ZIP archive named **IPE*MMDD*F.CSV.ZIP**	Naming as per Web Site	Not Available

Early	SP5	IPE*MMDD*E.SP5 ZIP archive named **IPE*MMDD*E.SP5.ZIP**.	Naming as per Web Site	Not Available
	CSV	IPE*MMDD*E.CSV ZIP archive named **IPE*MMDD*E.CSV.ZIP**	Naming as per Web Site	Not Available

Where:

YYYY is the Year (e.g. 2009) of the Business Date, ***MM*** is the Month of the Business Date, ***DD*** is the Day of the Business

2.2 File Structure

The file comprises records of different types, described in the following sections.

Each record contains a record type which always appears as the first (Integer) value in the comma separated values on any line of the file.

Certain records may contain variable numbers of elements and where this is the case, this is described in the record layout.

SPAN arrays are arranged as a hierarchy of data records

The general structure of the file is described below:

- **Record Types 10 -16 define Common Data**. Where SPAN is used in a multi-market (multi-exchange) environment, these records define data that is common across this environment (for example inter contract spreads that traverse multiple markets).
- **Record Type 20 Defines an Exchange (Market)** and acts as a "grouping" for all the records that follow either to the end of file or until the next Record Type 20. All records (Types 30, 40, 50, 60) that follow record 20 are defined within the context of the Exchange record.
- **Record Type 30 acts as a grouping in respect of a Combined Commodity**. The record types 31-35 that follow define specific tiers and spreads relating to the Combined Commodity. Following this, then, the Risk Arrays themselves (Record 60, Series Details) are defined within a hierarchy for each Contract (Record 40), Contract Expiry (Record 50).

See section **Error! Reference source not found.** for further information regarding processing of enhanced records.

The structure might be described in the following manner:

```
10 SPAN File Header Record
11 Contract Type Mapping Records
12 Currency Details
13 Currency Conversion Details
14: Intercontract Spread Details
15: Scenario Descriptions
16: Margin Group Descriptions
    20 Exchange Details
    21 Position Split Allocation Details
        30 Combined Contract Details
        31 Month Tier Details
        32 Leg Spread Details
        33 Prompt Date Charge Details
        34 Intercontract Tier Details
        35 Strategy Spread Details
            40 Contract Details
                50 Contract Expiry Details
                    60 Series Details
                    60 Series Details
                50 Contract Expiry Details
                    60 Series Details
                    60 Series Details
            40 Contract Details
```

```
            50 Contract Expiry Details
                60 Series Details
                60 Series Details
            50 Contract Expiry Details
                60 Series Details
                60 Series Details
    30 Combined Contract
        repeated sequence of record types 40, 50, 60
    30 Combined Contract
        repeated sequence of record types 40, 50, 60
```

NB to maintain generic compatibility with other formats, logically there may be iteration of records 20, 30, 40, 50, 60. However, the ICE file will contain details relating to ONE exchange only, i.e. ICE (Exchange code IPE).

2.3 Field Format

All values within a file are represented in text (i.e. ASCII) form; the file contains no "binary data".

For each field within the record definitions, the following information is given:

- For Fixed format records, the field length, starting and ending character position.
- Field Type.
- Optional indicator (a "Y" means the field is optional). For records that contain variable numbers of elements, the optional indicator is Y.
- Field name and description.

The field types are as follows:

String	Alphanumeric String - any printing ASCII. Values are quoted (i.e. contained in " " characters. The quotation marks should NOT be treated as part of the value. Strings will not contain leading or trailing spaces. For values such as Combined Commodity (e.g. "BRN", "G") care must be used to ensure that internal systems that may treat these values as fixed strings (e.g. "BRN", "G " handle such values appropriately.
Integer	Integer number with an optional sign (-) prefix. Value should be processed as an Integer. Numeric values are not presented in quotation marks.
Real	Floating point number, optional sign (-) prefix. Value should be processed as a real. Numeric values are not presented in quotation marks.
Date	Date in format YYYYMMDD. Where date represents a month, e.g. the expiry month of a future or option, then the DD component will be 00. Treated as a numeric value and not presented in quotation marks. NOTE: Where no date is required, a NULL date is represented by an EMPTY String, i.e. "".

Time	Time in format HHMMSS. Treated as a numeric value and not presented in quotation marks. NOTE: Where no time is required, a NULL date is represented by an EMPTY String, i.e. “”.

3 Processing the Enhanced Record Types in SPAN for ICE

This section describes the methodology for processing of the additional record types that appear within the SPAN for ICE Array files beyond the base specification relating to London SPAN 4. The methodology for processing of London SPAN 4Arrays is described in the London SPAN Technical Information Pack available on the Internet.

3.1 Position Split Allocation - Processing Record 21

3.1.1 Background

London SPAN 4 supports only two ways to combine positions in different products that share similar risk profiles.

a) Equivalent positions

In cases of identical risk and pricing behaviour SPAN combines two (or more) physical commodity codes into one logical commodity code. This concept is used today to offset the physical commodity codes H and PHH and group them into one logical commodity code HNG.

b) Inter-commodity offsets

Inter-commodity offsets are used to combine correlated products. It is widely used by the Clearing House to combine logical commodity codes with similar, but not identical risk and pricing behaviours. A wide range of tier structures are used to enable an efficient use of Inter-commodity offsets and address the fact that positions might have a high correlation at similar maturity points, but low correlations when two logical commodity codes are combined with non-matching maturities.

To overcome the limitations of these simple approaches, the Clearing House is introducing the concept of Position Split Allocation.

Position Split Allocation is typically used for positions in combinations and/or options on combinations where the underlying instruments of the combinations are in different physical commodities. With this feature, the position in the combination or the option on the combination is split out (allocated) into positions on the underlying instruments of the combination. A position split allocation then considers only the delta from the position in the combination or the option on the combination. This method allows a position in one product to be expressed as an equivalent set of positions in other, underlying, products. This then allows the components that make up the combination to each be margined with other positions within what are highly correlated underlying products rather than seek to express these correlations using inter-commodity spreads.

Position Split Allocation processing is applied to a portfolio prior to presenting the resulting positions to the standard SPAN processing algorithm. As such, this should be considered a position pre-processing step rather than a fundamental change to the London SPAN algorithm. This approach to implementation of this functionality has therefore been designed to minimize the implementation effort and avoid core structural change within any user implementation of the London SPAN algorithm.

London SPAN will continue to work under the current semantic and logic with any existing implementation of the London SPAN 4 algorithm not ready to use the new record type still functioning by either ignoring the new record type or by using the standard arrays. An algorithm that uses the Standard SPAN Arrays or that ignores Record 21 will still yield computation of valid margin results; these results will, in all cases, simply be higher than those yielded by the application of the Position Split Processing.

3.1.2 Method

Application of Position Split Allocation records is undertaken before the first processing step within SPAN, that of calculation of Scanning Risk.

Prior to submitting positions to the SPAN processing algorithm, all positions are subjected to pre-processing specified by the Position Split Allocation records (Record 21).

The Method is applied to Source Positions as follows:

For each Source Position

Look up set of of Record 21s that have the same *Contract Code, Contract Type, Expiry Date* and *Strike Price* to the Source Position

If we found corresponding Record 21s for the Source position,

then

For each Record 21 we found

Create an output position with:

Contract Code = Mapped Contract Code

Contract Type = Mapped Contract Type

Expiry Date = Mapped Expiry Date

Strike Price = Mapped Strike Price

Volume = Source Position Volume x Delta

Note that the original source position has been discarded and replaced by one or more positions in the mapped contracts and in the quantities determined by the mapped deltas. The original Source Position is not copied to the Output.

Process Next Record 21

Else, we found no corresponding Record 21s for the Source Position, so

Copy the Source Position to the Output position

Note that where no position split allocation records are defined in respect of a contract, the original positions simply pass through the process.

Go to the next Source Position

NOTE ABOUT ROUNDING: Whilst, conventionally, the position quantity would typically be an integer quantity, for the purposes of position split allocation, the result of the *Volume x Delta* calculation should be preserved as a floating/real/decimal amount and not subjected to rounding.

Having applied this position transformation logic to the source positions and having created the output positions, these output positions are presented to the London SPAN 4 algorithm in its traditional form.

3.2 Example

Source Position

Contract Code	Contract Type	Expiry Date	Strike Price	Position
CSO	C	20110100	400	50
T	F	20110200		25
T	F	20110100		-25

Position Split Allocation Records (Record 21)

Record Type	Contract Code	Contract Type	Expiry Date	Strike Price	Mapped Contract Code	Mapped Contract Type	Mapped Expiry Date	Mapped Strike Price	Delta
21	CSO	C	20110100	400	CSO	C	20110100	400	1

21	CSO	C	20110100	400	T	F	20110100	0	+0.6
21	CSO	C	20110100	400	T	F	20110200	0	-0.6

Output Position

Contract Code	Contract Type	Expiry Date	Strike Price	Position
CSO	C	20110100	400	50
T	F	20110100		+30
T	F	20110200		-30
T	F	20110200		+25
T	F	20110100		-25

The positions shaded are those that originate from the application of the Position Split Allocation records.

To illustrate the effect of the application of those records on the original position, we can obviously sum/aggregate the resultant position, which is now:

Physical Commodity Code	Contract Type	Expiry	Strike	Position
CSO	C	20110100	400	50
T	F	20110200		-5
T	F	20110100		5

3.3 Volatility Credit (Inter-Contract Credit Method 10) – Processing Record 14

Inter Contract Credit calculations performed under Method 10 are being enhanced to yield a credit in respect of the Volatility Risk component in addition to the Futures Risk Component.

The principle of the Volatility Credit is based on generating credits based on offsetting the Vega inherent in one Combined Contract with "opposite" Vega within another Combined Contract.

In order that the Vega offsets (Volatility Credits) can be applied at the same time as the existing inter-contract spreads (delta based spreads driven by Futures Price Risk and deltas), the Vega at the Combined Contract level must be apportioned at the inter-contract tier level.

Having determined these Inter-Contract Tier Vega amounts, these form the basis for calculation of the Volatility Credit.

3.3.1 Overview of Process

The steps involved in calculation of the Volatility Credit are as follows:

a. Calculate the Combined Contract Vega (See 3.3.3)

b. Pro-Rate the Combined Contract Vega to Inter-Contract Tiers (See 3.3.3)

c. Within Inter-Contract Spread Calculations, incorporate calculation of Volatility Credits (See 3.3.4)

3.3.2 Technical Description

In order to contrast the addition of Volatility Credit to the existing method, a description of the current method and new method are provided below.

3.3.2.1 *Current Method 10 Implementation*

For each Record 14 (an Inter-contract Spread)

☐ Calculate Inter-Contract Credit

- **For** each leg **in this Inter-contract Spread:**
  - **Calculate** ***WFPR Delta***
  - **Calculate** ***Scanning Risk*** **within Inter-Contract Tier**
  - **Calculate** ***Futures Price Risk***
  - **Calculate** ***Volatility Risk***
  - **Calculate** ***Time Risk***
  - **Calculate** ***Weighted Futures Price Risk (WFPR) = ROUND(Futures Price Risk / WFPR Delta)***
- **For this set of legs:**
  - **Determine the number of** ***Delta Spreads***
- **For** each leg **in this Inter-contract Spread**
  - **Calculate** ***Inter-Contract Credit = WFPR x Delta Ratio x Credit Rate x Delta Spreads*****, where,** ***Credit Rate*** **is defined in Credit Rate field within Record 14.**
  - **Reduce Absolute Delta for this leg by** ***Delta Spreads x Delta Ratio***

3.3.2.2 *Method 10 Implementation including Volatility Credit*

For each Record 14 (an Inter-contract Spread)

☐ Calculate Inter-Contract Credit

- **For** each leg **in this Inter-contract Spread:**
  - **Calculate** ***WFPR Delta***
  - **Calculate** ***Scanning Risk*** **within Inter-Contract Tier**
  - **Calculate** ***Futures Price Risk***
  - **Calculate** ***Volatility Risk***
  - **Calculate** ***Time Risk***
  - **Calculate** ***Weighted Futures Price Risk (WFPR) = ROUND(Futures Price Risk / WFPR Delta)***
  - **If this is first time this Combined Contract/Inter-Contract Tier has participated in an Inter-contract spread, Calculate** ***Inter-Contract Tier Vegas (see 3.3.3)***
- **For this set of legs:**
  - **Determine the number of** ***Delta Spreads***
  - **If the Offset Rate > 0**
    - **Determine the number of** ***Vega Spreads (See 3.3.4)***
- **For** each leg **in this Inter-contract Spread**
  - **Calculate** ***Futures Price Risk Credit = WFPR x Delta Ratio x Credit Rate x Delta Spreads*****, where,** ***Credit Rate*** **is defined in Credit Rate field within Record 14.** ***Futures Price Risk Credit*** **is rounded to 0dp.**
  - **Reduce Absolute Delta for this leg by** ***Delta Spreads x Delta Ratio***
  - **If the Offset Rate > 0**
    - **Calculate** ***Volatility Credit = Vega Spreads x Offset Rate,*** **where** ***Offset Rate*** **is defined in Offset rate field within Record 14.** ***Volatility Credit*** **is rounded to 0dp.**
    - **Reduce Absolute Vega for this leg by** ***Vega Spreads***
  - **Calculate** ***Inter-contract Credit = Futures Price Risk Credit + Volatility Credit***

3.3.3 *Calculation of Inter-Contract Tier Vega*

Calculation of Inter-Contract Tier Vega first requires calculation of the **Combined Contract Vega**. Once we have done so, we then pro-rate the Combined Contract Vega to the Inter-Contract Tiers.

3.3.3.1 *Calculate Combined Contract Vega*

Computation of Combined Contract Vega is based on the identification of the worst case loss scenario for that Combined Contract; i.e. the SAME scenario as determines the Scanning Risk:

- Identify the scenario yielding the worst case loss (i.e. Scanning Loss) for the Combined Contract and call this *S1* and the associated loss, *L1 (L1 is the Scanning Risk)*
- Identify the paired scenario of *S1* and call this *S2* and the loss, *L2*
- If the scenario *S1*, is ODD numbered then *Combined Contract Vega = (L1 - L2) / 2*, otherwise *Combined Contract Vega = (L2 - L1) /2*.
- For example:
  - Combined Contract, BRN has a worst case loss (Scanning Risk) of 1000 as determined by scenario 10, which has paired scenario 9).
  - Paired Scenario 9 has a scanning loss of -200; the odd numbered scenario.
  - The *Combined Contract Vega*, is then, (-200 – 1000) / 2, i.e. -600.
  - NB positive values of scanning loss indicate loss.
- Computation of *Combined Contract Vega* can be determined at the same time as calculating scanning risk for the Combined Contract.

3.3.3.2 *Pro-rata Combined Contract Vega to Inter-Contract Tiers – Calculate Inter-Contract Tier Vega.*

Having determined the Combined Contract Vega we need to apportion this to the Inter-Contract Tiers in order that we can use this as the basis for calculating Volatility Credits.

The Combined Contract Vega is distributed on a pro-rata basis and is determined by the Vega within the Inter-Contract Tier.

The Vega inherent in an Inter-Contract Tier is not always of the same direction (ie sign) as that of the Combined Contract and is therefore is only prorated to those Inter-Contract tiers that have Vega of the same direction as that of the Combined Contract Vega.

To determine the Inter-Contract Tier Vegas, we follow these steps:

- *Total Original Inter-Contract Tier Vega = 0;*
- For Each Inter-contract Tier for this Combined Contract:
  - Calculate *Original Inter-Contract Tier Vega* by identifying the total scanning losses within this inter-contract tier corresponding to scenarios *S1* and *S2* from 3.3.3.1;
  - If the scenario *S1*, is ODD numbered then *Original Inter-Contract Tier Vega = (L1 - L2) / 2*, otherwise *Original Inter-Contract Tier Vega = (L2 - L1) /2*;
  - If the *Original Inter-Contract Tier Vega* is the same direction (i.e. Sign) as the Combined Contract Vega, then add this to the running total *Total Original Inter-Contract Tier Vega;*
  - NOTE
    - *S1* and *S2* here are not necessarily the same scenario pair used, at Inter-Contract Tier level to determine Futures Price Risk etc.;
    - The sum of *Original Inter-Contract Tier Vega* will be equal to the *Combined Contract Vega*;
    - The *Total Original Inter-Contract Tier Vega* may not equal the *Combined Contract Vega* as it only includes vegas of the same direction (sign) as the *Combined Contract Vega.*

Now, apportion the *Combined Contract Vega* to the Inter-contract Tiers using the *Original Inter-Contract Tier Vegas* and *Total Original Inter-Contract Tier Vega* we calculated above.

- For Each Inter-contract Tier for this Combined Contract:
  - If *Original Inter-Contract Tier Vega* is same direction (sign) as *Combined Contract Vega,*

    Then,

Inter-Contract Tier Vega = *Combined Contract Vega x (Original Inter-Contract Tier Vega / Total Original Inter-Contract Tier Vega)*

Otherwise,

Inter-Contract Tier Vega = 0

- For example:
  - Combined Contract, BRN has a *Combined Contract Vega* of -600 which we determined based on scenarios 9 and 10. (See 3.3.3.1)
  - Let us assume that BRN has 3 Inter-contract Tiers for which we determine Inter-Contract Tier Vega based on the scanning losses, within each tier relating to scenarios 9 and 10:

ICT Tier	Scenario 9 Loss	Scenario 10 Loss	Original ICT Vega
1	-3000	-1000	-1000
2	4000	1000	900
3	-2000	-1000	-500
		Total	**-600**

  - As the *Combined Contract Vega* is a negative amount, we will only apportion to tiers 1 and 3; Tier 2 is a positive value so will be 0. The sum of the *Original Inter-Contract Tier Vegas* (that are same sign as Combined Contract Vega), is then -1000 + -500, i.e. -1500.
  - This results in *Inter-Contract Tier Vegas* as follows:

ICT Tier	Scenario 9 Loss	Scenario 10 Loss	Original ICT Vega	Formula ICT Vega	ICT Vega
1	-3000	-1000	-1000	(-1000/-1500) x -600	-400
2	4000	1000	900	0	0
3	-2000	-1000	-500	(-500/-1500) x -600	-200

- *Inter-Contract Tier Vega* can be determined at the same time as calculating scanning risk for the Combined Contract.

3.3.4 Calculation of Vega Spreads and Volatility Credit

Calculation of the Vega Spreads and Volatility Credit can be undertaken at the same time as calculation of the existing delta based credit.

Conceptually, determination of Vega Spreads, based on the Inter-Contract Tier Vegas uses the same approach as determining delta spreads. Unlike the determination of delta spreads, calculation of the Vega Spread does not involve a Ratio; Vega is an amount of money.

The Vega Spread is computed based on the same spread details as the Delta Spread (ignoring the ratio), i.e. the Combined Contract and Side pairs/triples/quads expressed in Inter-Contract Spread records (ie Record 14). The rate applicable to the Vega Spread (to determine Volatility Credit) utilises the Offset Rate (where Delta Spreads utilise the Credit rate).

Vega Spreads are only determined if there is an Offset Rate specified. Vega Spreads are not formed and consequently, yield zero Volatility Credit, where the Offset Rate is zero. This avoids "consuming" inter-contract tier vega which that yields no credit; the vega may be used in a later spread to yield a credit.

It is important to note that an inter-contract spread may yield Futures Credit, Vega Credit or both. It is possible that Inter-Contract Tier Vega can be offset (and credits generated) after all delta has been consumed and vice-versa.

It is important to remember that the amount of Inter-Contract Tier Vega on each Inter contract Tier be reduced by the number of Spreads formed.

Example:

Take the following Inter-Contract Spreads (as defined by record 14):

Commodity 1	ICT Tier No	Commodity 2	ICT Tier No	Offset rate
BRN	1	BSP	1	0.93
BRN	1	BSP	2	0.89
BRN	1	BSP	3	0.87
BRN	2	BSP	2	0.92
BRN	2	BSP	3	0.86
BRN	3	BSP	3	0.88

Take the following BRN Inter-Contract Tier Vegas and BSP Inter-Contract Vegas

Comb. Contract	ICT Tier	ICT Vega
BRN	1	-400
BRN	2	0
BRN	3	-200

Comb. Contract	ICT Tier	ICT Vega
BSP	1	+200
BSP	2	+300
BSP	3	+100

Now we calculate the Vega Spreads and Volatility Credits

Commodity 1	ICT Tier No	ICT Vega before Spread	ICT Vega After Spread	Commodity 2	ICT Tier No	ICT Vega Before Spread	ICT Vega After Spread	Vega Spreads	Offset rate	Volatility Credit PER SIDE
BRN	1	-400	-200	BSP	1	+200	0	200	0.93	186
BRN	1	-200	0	BSP	2	+300	+100	200	0.89	178
BRN	1	0	0	BSP	3	+100	+100	0	0.87	0
BRN	2	0	0	BSP	2	+100	+100	0	0.92	0
BRN	2	0	0	BSP	3	+100	+100	0	0.86	0
BRN	3	-200	-100	BSP	3	+100	0	100	0.88	88

3.3.5 Implementation Considerations

It is important, to consider the following points when approaching the implementation of this change:

☐ Vega could be calculated either:

- At the same time as the inter-contract tier delta is determined; typically at the same time as computing scanning losses;
- At the same time as computing Inter-contract credits and where this is the case, ensuring that the vega is calculated ONLY on the first occasion an inter-contract tier is referenced.

☐ The sign of the Vega within an inter contract tier may be different to that of the delta within the tier.

☐ Vega attributed to an inter-contract tier is reduced each time a vega credit is formed. Therefore, the vega within an inter-contract tier should only be computed once and thereafter this vega is reduced each time a vega spread is computed to yield a Volatility Credit.

☐ Vega is only "consumed" within the Inter-Contract spread process where the Offset Rate is non-zero, ie where a credit would be generated by any spread.

- ☐ It is possible that two inter-contract tiers yield a Volatility Credit (ie they exhibit a Vega Spread) but do not generate a delta spread derived Futures Credit.. For example, the deltas on two inter-contract tiers for which a simple 2 legged, A v B spread applies are the same sign, hence no delta spreads are formed whilst the Vegas on those two legs are oppositely signed (i.e. one +ve and one –ve) and thus yield a Volatility Credit.

Vega should only be "consumed" where a Volatility Credit is created. I.e. If the Offset Rate is defined as zero (0) or ignored, then, the amount of Inter-contract Credit will be the same as that calculated if there was no Volatility Credit. This means that, for applications where there is no Volatility Credit applied (i.e. the Offset rate is set to 0 as it would be prior to the implementation of this change), this approach is entirely backwardly compatible.

3.3.6 Worked Example using SPAN for ICE

The following example has been created using SPAN for ICE as the calculator and in order to create sample reports. (SPAN for ICE can be downloaded from https://www.theice.com/clear_europe_span.jhtml). You must use version 1.0.3.3 or later.

This example is based on the test SPAN Array file IPE0313T.CSV/SP5 which is available for download from the AFTS service and is located in the /span/test directory.

The positions used are:

Commodity	Contract Type	Expiry	Strike	Net Position
B	C	20120500	12450	10
B	C	20120600	12400	-10
B	C	20121000	12400	10
I	C	20120300	12550	-50

These positions can also be downloaded from the same directory as the arrays; the position file is named POSITION_MG1.CSV. This file is in SPAN for ICE format.

3.3.6.1 Scanning Loss and Combined Contract Vega

Summary Scanning Risk 13 Mar 2012

ACCOUNT: MG1

Margin Group: IPE "ICE Clear Europe"

Exchange: I "ICE Futures Europe"

Combined Contract: BRN "BRENT CRUDE OIL" (USD)

Contract	Currency	F-Extreme	F-3/3 Vol Up/Dn	F-2/3 Vol Up/Dn	F-1/3 Vol Up/Dn	F+0 Vol Up/Dn	F+1/3 Vol Up/Dn	F+2/3 Vol Up/Dn	F+3/3 Vol Up/Dn	F+Extreme
B	USD	13700	20700 28500	13600 22100	5300 14400	-4000 5200	-14300 -5400	-25500 -17200	-37800 -30100	-26400
BRN	USD	13700	20700 28500	13600 22100	5300 14400	-4000 5200	-14300 -5400	-25500 -17200	-37800 -30100	-26400

Largest Loss Scenario: 14 (F-3/3 Vol Down)

Scanning Risk: 28500

Combined Contract Vega 3900:

Combined Contract: BSP "Crude Brent 1st Line" (USD)

Contract	Currency	F-Extreme	F-3/3 Vol Up/Dn	F-2/3 Vol Up/Dn	F-1/3 Vol Up/Dn	F+0 Vol Up/Dn	F+1/3 Vol Up/Dn	F+2/3 Vol Up/Dn	F+3/3 Vol Up/Dn	F+Extreme
I	USD	-10500	-28500 -30500	-23000 -30500	-11500 -28000	10500 -13000	44000 24500	88500 78500	140500 136500	109500
BSP	USD	-10500	-28500 -30500	-23000 -30500	-11500 -28000	10500 -13000	44000 24500	88500 78500	140500 136500	109500

Largest Loss Scenario: 11 (F+3/3 Vol Up)

Scanning Risk: 140500

Combined Contract Vega -2000:

For BRN, the Scanning Risk is determined by scenario 14, so the Combined Contract Vega is:

-1 x (Scanning Loss for Scenario 13 – Scanning Loss for Scenario 14) / 2, i.e. (20700 - 28500)/2 = 3900.

For BSP, the Scanning Risk is determined by scenario 11, so the Combined Contract Vega is:

-1 x (Scanning Loss for Scenario11 – Scanning Loss for Scenario 12) / 2, i.e. (140500 - 136500)/2 = -2000.

*NOTE: **Why the -1 x in the above calculation:** SPAN for ICE generally reports "losses" as positive numbers, ie a scanning loss is shown as a positive number, whereas a "gain" would be signed as a –ve amount. In SPAN for ICE reporting and purely for "optical" reasons, a positive vega indicates a gain and therefore is negated. This makes no difference to the computation of vega credits etc provided that carrying of signed amounts is done consistently.*

3.3.6.2 Allocation of Combined Contract Vega to Inter-Contract Tiers

The first stage is to determine the Original Vegas for each Inter-contract Tier.

ICE CLEAR

Summary Value Losses 13 Mar 2012

ACCOUNT: MG1

Margin Group: IPE "ICE Clear Europe"

Exchange: I "ICE Futures Europe"

Combined Contract: BRN "BRENT CRUDE OIL" (USD)

Contract: B "B - ICE Brent Options" (USD)

Expiry	G/T	Net Position	Delta	F-Extreme	F-3/3 Vol Up/Dn	F-2/3 Vol Up/Dn	F-1/3 Vol Up/Dn	F+0 Vol Up/Dn	F+1/3 Vol Up/Dn	F+2/3 Vol Up/Dn	F+3/3 Vol Up/Dn	F+Extreme
20120500	O	10	5.6660	12900	21500 29800	14500 23800	6000 15900	-4100 5800	-15600 -6200	-28500 -20000	-42700 -35400	-31200
20120600	O	-10	-5.4490	-15800	-22300 -32400	-14200 -24800	-5200 -16000	4800 -6100	15700 4900	27500 17100	40100 30200	27400
20121000	O	10	4.8990	16600	21500 31100	13300 23100	4500 14500	-4700 5500	-14400 -4100	-24500 -14300	-35200 -24900	-22600
Totals For B												
				13700	20700 28500	13600 22100	5300 14400	-4000 5200	-14300 -5400	-25500 -17200	-37800 -30100	-26400

In this example, each position is in a separate tier, where multiple positions fall in the same tier, the total value losses for all positions within the tier must be used and this may span multiple expiries.

In this case, the highlighted values are the value loss from which the Original Vega is determined. Note that these are those value losses associated with tiers 13/14, ie the same as those used to derive the Combined Contract Vega.

This yields Original Vegas as follows:

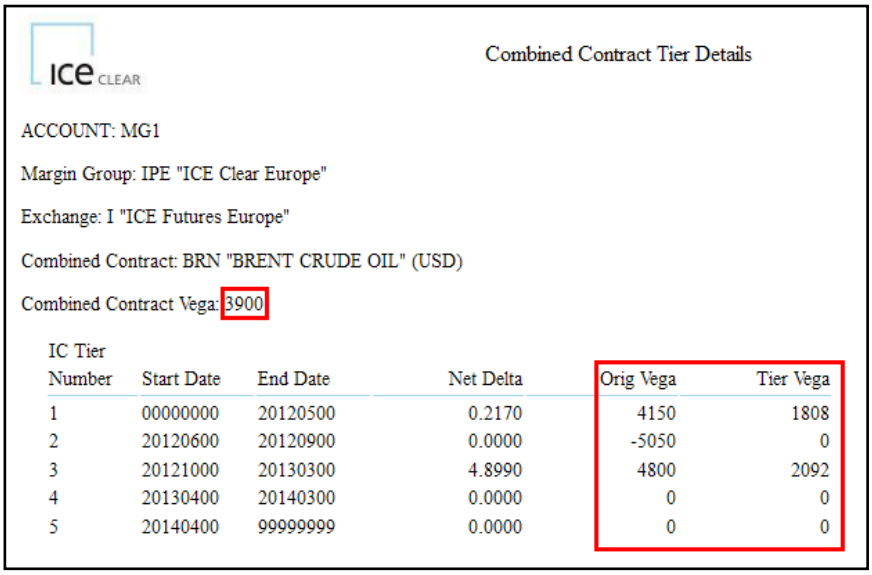
Inter-Contract Tier	Computation	Original Vega
1	-1 x (21500 - 29800)/2	4150
2	-1 x (-22300 - -32400)/2	-5050
3	-1 x (21500 - 31100)/2	4800

The Total Original Vega is the sum of the Original Vegas that are of the same direction (sign) as the Combined Contract Vega. As the Combined Contract Vega is positive, then, this is (4150 + 4800), ie 8950.

The Combined Contract Vega is then apportioned to tiers 1 and 3

Inter-Contract Tier	Computation of Original Vega	Original Vega	Computation of Tier Vega	
1	-1 x (21500 - 29800)/2	4150	3900 x 4150/8950	1808
2	-1 x (-22300 - -32400)/2	-5050	Different Sign so, 0	0
3	-1 x (21500 - 31100)/2	4800	3900 x 4800/8950	2092

The process of apportioning the Combined Contract Vega for BRN to the Inter-contract tiers is reported by SPAN for ICE as follows:



Combined Contract Tier Details

ACCOUNT: MG1

Margin Group: IPE "ICE Clear Europe"

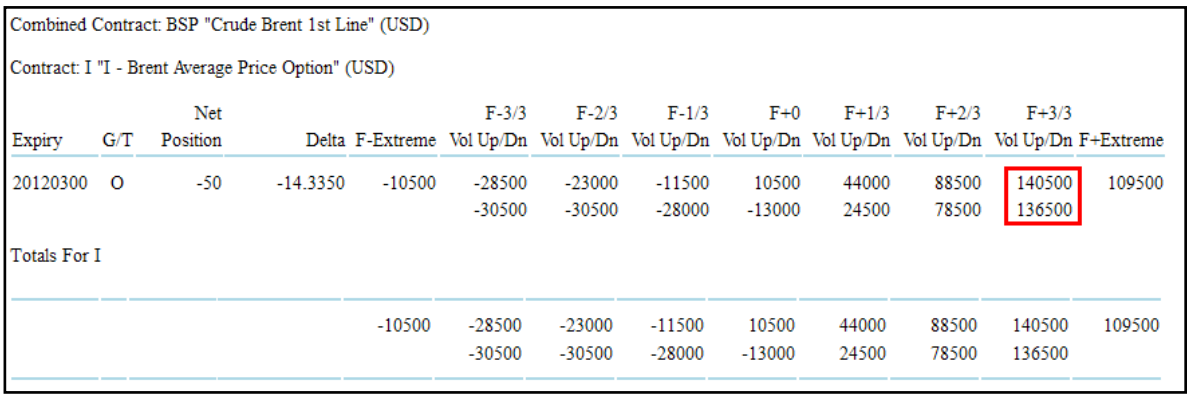
Exchange: I "ICE Futures Europe"

Combined Contract: BRN "BRENT CRUDE OIL" (USD)

Combined Contract Vega: 3900

IC Tier Number	Start Date	End Date	Net Delta	Orig Vega	Tier Vega
1	00000000	20120500	0.2170	4150	1808
2	20120600	20120900	0.0000	-5050	0
3	20121000	20130300	4.8990	4800	2092
4	20130400	20140300	0.0000	0	0
5	20140400	99999999	0.0000	0	0

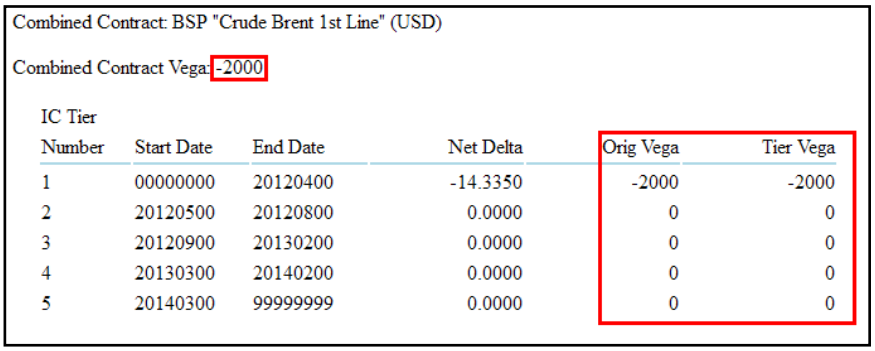
The same process is undertaken in respect of each combined contract. In the case of this portfolio, for BSP, the tier level vegas are as follows. Note that in this case, there is only one position and one tier involved. The following report snapshots show this reported by SPAN for ICE.



Combined Contract: BSP "Crude Brent 1st Line" (USD)

Contract: I "I - Brent Average Price Option" (USD)

Expiry	G/T	Net Position	Delta	F-Extreme	F-3/3 Vol Up/Dn	F-2/3 Vol Up/Dn	F-1/3 Vol Up/Dn	F+0 Vol Up/Dn	F+1/3 Vol Up/Dn	F+2/3 Vol Up/Dn	F+3/3 Vol Up/Dn	F+Extreme
20120300	O	-50	-14.3350	-10500	-28500 -30500	-23000 -30500	-11500 -28000	10500 -13000	44000 24500	88500 78500	140500 136500	109500
Totals For I												
				-10500	-28500 -30500	-23000 -30500	-11500 -28000	10500 -13000	44000 24500	88500 78500	140500 136500	109500



Combined Contract: BSP "Crude Brent 1st Line" (USD)

Combined Contract Vega: -2000

IC Tier Number	Start Date	End Date	Net Delta	Orig Vega	Tier Vega
1	00000000	20120400	-14.3350	-2000	-2000
2	20120500	20120800	0.0000	0	0
3	20120900	20130200	0.0000	0	0
4	20130300	20140200	0.0000	0	0
5	20140300	99999999	0.0000	0	0

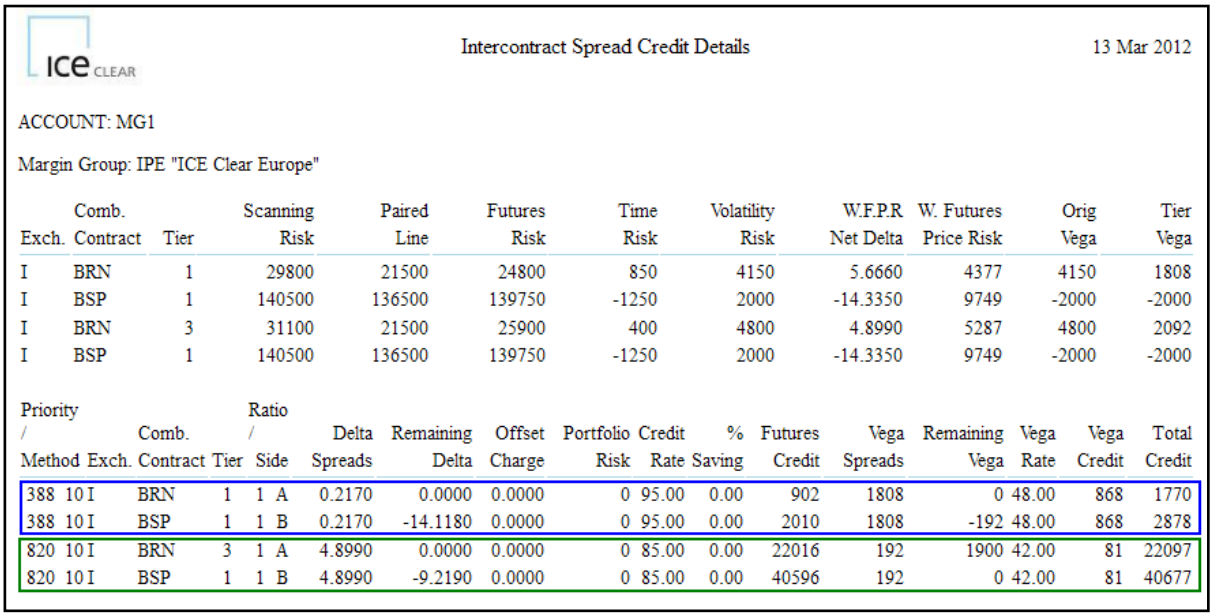
3.3.6.3 *Calculation of Inter-Contract Credit*

Having determined the Inter-Contract Tier Vegas, SPAN now applies inter-contract credits.

The following inter-contract credits, reported here, by SPAN for ICE, are generated:

In Spread 388, between BRN Tier 1 and BSP Tier 1, there is a Vega Spread of 1808 (+1808 from BRN versus -1808 from BSP). Applying a rate of 48%, this yields a Vega (Volatility) Credit of $868 on each leg. This uses all the Vega in BRN Tier 1 and leaves -192 vega in BSP tier 1. The Volatility Credit of 868 is added to the Futures credit ($902 for the BRN leg and $2010 for the BSP leg) to yield total credits of $1770 and $2878 for the BRN and BSP legs respectively.

In Spread 820m beteen BRN Tier 3 and BSP Tier 1, the remaining -192 BSP Tier 1 vega is then spread to yield a Volatility Credit of $81 on each leg.



ICE CLEAR

Intercontract Spread Credit Details 13 Mar 2012

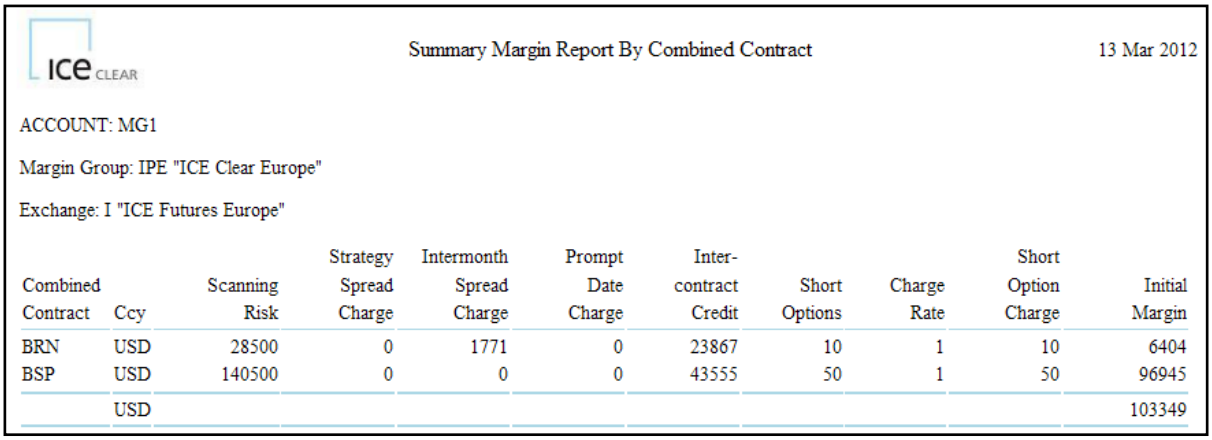
ACCOUNT: MG1

Margin Group: IPE "ICE Clear Europe"

Exch.	Comb. Contract	Tier	Scanning Risk	Paired Line	Futures Risk	Time Risk	Volatility Risk	W.F.P.R Net Delta	W. Futures Price Risk	Orig Vega	Tier Vega
I	BRN	1	29800	21500	24800	850	4150	5.6660	4377	4150	1808
I	BSP	1	140500	136500	139750	-1250	2000	-14.3350	9749	-2000	-2000
I	BRN	3	31100	21500	25900	400	4800	4.8990	5287	4800	2092
I	BSP	1	140500	136500	139750	-1250	2000	-14.3350	9749	-2000	-2000

Priority / Method	Exch.	Comb. Contract	Tier	Ratio / Side		Delta Spreads	Remaining Delta	Offset Charge	Portfolio Risk	Credit Rate	% Saving	Futures Credit	Vega Spreads	Remaining Vega	Vega Rate	Vega Credit	Total Credit
388	I	BRN	1	1	A	0.2170	0.0000	0.0000	0	95.00	0.00	902	1808	0	48.00	868	1770
388	I	BSP	1	1	B	0.2170	-14.1180	0.0000	0	95.00	0.00	2010	1808	-192	48.00	868	2878
820	I	BRN	3	1	A	4.8990	0.0000	0.0000	0	85.00	0.00	22016	192	1900	42.00	81	22097
820	I	BSP	1	1	B	4.8990	-9.2190	0.0000	0	85.00	0.00	40596	192	0	42.00	81	40677

These credits are aggregated and summarised on the SPAN for ICE Summary shown below.



ICE CLEAR

Summary Margin Report By Combined Contract 13 Mar 2012

ACCOUNT: MG1

Margin Group: IPE "ICE Clear Europe"

Exchange: I "ICE Futures Europe"

Combined Contract	Ccy	Scanning Risk	Strategy Spread Charge	Intermonth Spread Charge	Prompt Date Charge	Inter-contract Credit	Short Options	Charge Rate	Short Option Charge	Initial Margin
BRN	USD	28500	0	1771	0	23867	10	1	10	6404
BSP	USD	140500	0	0	0	43555	50	1	50	96945
	USD									103349

4 Record Formats - CSV

4.1 Record Type 10: SPAN File Header Record

This record provides basic file properties relating to the SPAN Array file.

Type	Opt	Description
Integer		Record Type - Always 10
String		File Type
Integer		Format Version
Date		Business Date
String		File Identifier
Date		File Creation Date
Time		File Creation Time
Integer		Number of Scenarios

Format version indicates the format of the file

Business Date indicates the business date to which the file relates.

File identifier will be "F".

The number of scenarios is always 16.

4.2 Record Type 11: Contract Type Mapping Record

This data provides the mapping between a Contract type and Generic Contract Type.

Type	Opt	Description
Integer		Record Type - Always 11
String		Contract Type
String		Generic Contract Type
String		Contract Type Description

4.3 Record Type 12: Currency Details

This record provides basic parameter information relating to currencies that are referred to within the file.

The Currency exponent for all currencies in use within ICE is 0.

Type	Opt	Description
Integer		Record Type – Always 12
String		Currency Code
String		Currency Description
Integer		Currency Exponent

4.4 Record Type 13: Currency Conversion Details

These records provide Currency FX information that is used by SPAN when a Combined Commodity comprises contracts with different base currencies in order that SPAN can determine the margin in the base currency of the combined commodity.

This is not currently relevant to ICE.

Type	Opt	Description
Integer		Record Type - Always 13
String		Contract Currency
String		Margin Currency
Real		Contract / Margin Currency multiplier (FX Rate)
Real		Percentage FX Shift Up
Real		Percentage FX Shift Down

4.5 Record Type 14: Intercontract Spread Details

These records define the Intercontract spreads.

Type	Opt	Description
Integer		Record Type - Always 14
String		Contract Group
Integer		Spread Priority
Integer		Spread Method Code – Always 10
Real		Spread Credit Rate (%)
Real		Offset Rate (For Spread Methods other than 10, this is an Integer value, whereas, for Method 10

		this is a real number)
Integer		Number of Legs
String		Exchange Code 1
String		Combined Contract 1
Integer		Tier Number 1
String		Spread Side 1
Integer		Delta/Spread Ratio 1
String		Exchange Code 2
String		Combined Contract 2
Integer		Tier Number 2
String		Spread Side 2
Integer		Delta/Spread Ratio 2
String	Y	Exchange Code 3
String	Y	Combined Contract 3
Integer	Y	Tier Number 3
String	Y	Spread Side 3
Integer	Y	Delta/Spread Ratio 3
String	Y	Exchange Code 4
String	Y	Combined Contract 4
Integer	Y	Tier Number 4
String	Y	Spread Side 4
Integer	Y	Delta/Spread Ratio 4

Field Type Changes	Old Type
Offset Rate	Integer

A separate record is provided for each allowable spread. For a given contract spread group, the allowable spread records are sorted in order by spread priority.

For each such spread, there are a minimum of two, and a maximum of four legs to the spread. Each group of five fields, Exchange Code, Combined Contract Code, Tier Number, Delta/Spread Ratio and Spread Side, relates to a single leg.

For each leg, the Tier Number indicates the Inter-contract Tier Number for the specified Combined Contract. These tiers are defined in record type 34.

For each leg, the Delta/Spread Ratio indicates the amount of delta for that leg consumed by each spread. For example, a typical two-legged spread might be a 1:1 spread, or a 2:1 spread. A three-legged spread might be 1:1:1, or 2:1:3, etc.

For each leg, the Spread Side indicates on which side of the spread that leg must be. The possible values for the spread side are "A" or "B". This value indicates only that certain legs of the spread must be on opposite sides from each other, and not that a particular leg must be net long or short.

The Exchange Code value for each leg of the spread will indicate the exchange to which this leg of the spread pertains. Always IPE.

4.6 Record Type 15: Scenario Descriptions

These records provide a textual description for the scenarios.

Type	Opt	Description
Integer		Record Type - Always 15
Integer		Scenario Number
String		Scenario Description
Integer		Paired Scenario Number

4.7 Record Type 16: Margin Group Descriptions

These records provide a description for the Margin Groups.

Type	Opt	Description
Integer		Record Type - Always 16
String		Initial Margin Group
String		Initial Margin Group Description

4.8 Record Type 20: Exchange Details

This record provides details relating to the Exchange.

Exchange Code I is ICE.

Type	Opt	Description
Integer		Record Type - Always 20
String		Exchange Code
String		Exchange Short Name
String		File Identifier

4.9 Record Type 21: Position Split Allocation Details

The Record 21 describes a component of a position split to be applied to source positions. Multiple Split Allocation Details may be specified in relation to a contract and in the Position Split Allocation processing, a single input position is transformed into multiple output positions.

The product key for source positions is defined as Contract Code, Contract Type, Expiry Date and Strike Price.

All positions on the source position file that have this product key are transformed into positions in the specified Mapped Product with one Mapped position being created for each of the record 21s that relate to the source product.

A full explanation of how these records are utilised is provided in Section 3.1.

Type	Opt	Name	Example Value	Description
Integer		Record Type	21	Always 21
String		Contract Code	CSO	Physical commodity code of the product for which a position split allocation should be used
String		Contract Type	C	The contract type can have the following values: F (Futures), M (Monthlies), D (Dailies), C (Call), P (Put)
String		Expiry Date	20100800	The expiry date of the contract in the format YYYYMMDD. For non-daily contracts the days are displayed in the format "00".

Integer		Strike Price	500	Only specified if Contract Type is C or P. The strike is displayed in the array/position file format; i.e. as an integer number of ticks: e.g. for PHH a strike of 500 must be divided by the Strike Denominator (100) to get the monetary price equivalent value of 5. This value can be negative.
String		Mapped Contract Code	WBS	Physical commodity code of the product for which the for which a position split allocation should be created
String		Mapped Contract Type	F	The contract type can have the following values: F (Futures), M (Monthlies), D (Dailies), C (Call), P (Put)
String		Mapped Expiry Date	20100800	The expiry date of the contract in the format YYYYMMDD. For non-daily contracts the days are displayed in the format "00".
Integer		Mapped Strike Price	0	Only specified if Mapped Contract Type is C or P. The strike is displayed in the array/position file format; i.e. as an integer number of ticks: e.g. for PHH a strike of 500 must be divided by the Strike Denominator (100) to get the monetary price equivalent value of 5. This value can be negative.
Real		Delta	-0.543428	Usual value for Futures, Monthlies, and Dailies will be one. For options this value will range between -1 and 1. It might have up to 7 decimal places.

4.10 Record Type 30: Combined Contract Details

These records define the parameters relating to a Combined Contract.

The Record 30 is a root of the Combined Contract hierarchy and subsequent record 40, 50, 60 records all relate to the preceding record 30; until the next record 30 is encountered.

Type	Opt	Description
Integer		Record Type - Always 30
String		Combined Contract Code
String		Combined Contract Name
String		Contract Group
String		Initial Margin Group
String		Margin Currency Code
Real		Extreme Price Shift
Real		Loss Covered (%)
Integer		Short Option Minimum Charge Rate
Integer		Strategy Spread Method Code
Integer		Interprompt Spread Method Code
Integer		Prompt Date Method Code
Date		End of Risk Period

4.11 Record Type 31: Month Tier Details

Record 31, of which there may be multiple, defines the inter-month tiers that apply to this Combined Commodity and are used in Interprompt spread calculations.

Each record can define up to 8 tiers. If more than 8 tiers are required, then, multiple Record 31s may be used.

NOTE: The Start and End of Expiry Group can be represented as either a DATE (an expiry date in YYYYMM00 format or a Month Number.

Type	Opt	Description
Integer		Record Type - Always 31
Integer		Number of Tiers
Integer		Tier Number 1
Date		Starting Expiry Group 1
Date		Ending Expiry Group 1
Integer	Y	Tier Number 2
Date	Y	Starting Expiry Group 2
Date	Y	Ending Expiry Group 2
Integer	Y	Tier Number 3
Date	Y	Starting Expiry Group 3
Date	Y	Ending Expiry Group 3
Integer	Y	Tier Number 4
Date	Y	Starting Expiry Group 4
Date	Y	Ending Expiry Group 4
Integer	Y	Tier Number 5
Date	Y	Starting Expiry Group 5
Date	Y	Ending Expiry Group 5
Integer	Y	Tier Number 6
Date	Y	Starting Expiry Group 6
Date	Y	Ending Expiry Group 6
Integer	Y	Tier Number 7
Date	Y	Starting Expiry Group 7
Date	Y	Ending Expiry Group 7
Integer	Y	Tier Number 8
Date	Y	Starting Expiry Group 8
Date	Y	Ending Expiry Group 8

4.12 Record Type 32: Leg Spread Details

This defines the interprompt spreads with reference to the Month Tiers defined within the Record type 30s.

Each record may define up to 4 spreads; where more than 4 spreads are required, multiple record type 32s may be used.

Type	Opt	Description
Integer		Record Type - Always 32
Integer		Interprompt Spread Priority
Integer		Spread Charge Rate
Integer		Number of Legs
Integer		Tier Number 1
Integer		Delta Spread Ratio 1

String		Market Side 1
Integer		Tier Number 2
Integer		Delta Spread Ratio 2
String		Market Side 2
Integer	Y	Tier Number 3
Integer	Y	Delta Spread Ratio 3
String	Y	Market Side 3
Integer	Y	Tier Number 4
Integer	Y	Delta Spread Ratio 4
String	Y	Market Side 4

4.13 Record Type 33: Prompt Date Charge Details

This defines the prompt date charges. Each record may define up to 4 charges; if more charges are required, then multiple records may be used.

Type	Opt	Description
Integer		Record Type - Always 33
Integer		Number of Expiry Groups
Date		Expiry Group 1
Integer		Spread Charge 1
Integer		Outright Charge 1
String		Delta Sign 1
Date	Y	Expiry Group 2
Integer	Y	Spread Charge 2
Integer	Y	Outright Charge 2
String	Y	Delta Sign 2
Date	Y	Expiry Group 3
Integer	Y	Spread Charge 3
Integer	Y	Outright Charge 3
String	Y	Delta Sign 3
Date	Y	Expiry Group 4
Integer	Y	Spread Charge 4
Integer	Y	Outright Charge 4
String	Y	Delta Sign 4

4.14 Record Type 34: Intercontract Tier Details

This defines the intercontract tiers.

Each record may define up to 8 tiers, where more are required, there may be multiple records.

Type	Opt	Description
Integer		Record Type - Always 34
Integer		Number of Intercontract Tiers
Integer		Intercontract Tier Number 1

Integer		Starting Month Tier Number
Integer		Ending Month Tier Number 1
Integer	Y	Intercontract Tier Number 2
Integer	Y	Starting Month Tier Number 2
Integer	Y	Ending Month Tier Number 2
Integer	Y	Intercontract Tier Number 3
Integer	Y	Starting Month Tier Number 3
Integer	Y	Ending Month Tier Number 3
Integer	Y	Intercontract Tier Number 4
Integer	Y	Starting Month Tier Number 4
Integer	Y	Ending Month Tier Number 4
Integer	Y	Intercontract Tier Number 5
Integer	Y	Starting Month Tier Number 5
Integer	Y	Ending Month Tier Number 5
Integer	Y	Intercontract Tier Number 6
Integer	Y	Starting Month Tier Number 6
Integer	Y	Ending Month Tier Number 6
Integer	Y	Intercontract Tier Number 7
Integer	Y	Starting Month Tier Number 7
Integer	Y	Ending Month Tier Number 7
Integer	Y	Intercontract Tier Number 8
Integer	Y	Starting Month Tier Number 8
Integer	Y	Ending Month Tier Number 8

4.15 Record Type 35: Strategy Spread Details

This defines strategy spreads.

Each record may define up to 8 strategy spreads and where more than 8 are required, additional records will be provided.

Each leg comprises three fields: the expiry group for the leg, the delta spread ratio and the market side of the leg ("A" or "B").

Each spread must have at least two legs. Data relating to legs three through eight is optional.

Strategy spread records are ordered by spread priority.

Type	Opt	Description
Integer		Record Type - Always 35
Integer		Strategy Spread Priority
Integer		Spread Charge Rate
Integer		Number of Legs
Date		Expiry Group 1
Integer		Delta Spread Ratio 1
String		Market Side 1
Date		Expiry Group 2

Integer		Delta Spread Ratio 2
String		Market Side 2
Date	Y	Expiry Group 3
Integer	Y	Delta Spread Ratio 3
String	Y	Market Side 3
Date	Y	Expiry Group 4
Integer	Y	Delta Spread Ratio 4
String	Y	Market Side 4
Date	Y	Expiry Group 5
Integer	Y	Delta Spread Ratio 5
String	Y	Market Side 5
Date	Y	Expiry Group 6
Integer	Y	Delta Spread Ratio 6
String	Y	Market Side 6
Date	Y	Expiry Group 7
Integer	Y	Delta Spread Ratio 7
String	Y	Market Side 7
Date	Y	Expiry Group 8
Integer	Y	Delta Spread Ratio 8
String	Y	Market Side 8

4.16 Record Type 40: Contract Details

This defines detailed parameters associated with a contract.

All those record 50 and record 60 records that follow in the file relate to the contract given in this record, until superseded by another contract record.

The delta divisor is used to scale a contract's delta, eg. in Interprompt spreading where combined contracts have varying contract sizes.

The decimal locator and strike denominator fields are used to convert the strike price on record 60, which is in display format, into a decimal value.

The settlements style field applicable to options contracts has the following values:

1 - Premium paid-up-front

2 - Futures style

Type	Opt	Description
Integer		Record Type - Always 40
String		Contract Code
String		Generic Contract Type
String		Contract Description
String		Contract Currency
Integer		Tick Denominator
Integer		Minimum Price Fluctuation (in ticks)
Real		Tick Value

Real		Delta Divisor
Integer		Decimal Locator
Integer		Strike Denominator
Integer		Scanning Range (in ticks)
Integer		Settlement Style Method

4.17 Record Type 50: Contract Expiry Details

This record provides detail regarding a specific contract expiry within the contract identified by the preceding record type 40.

All succeeding records in the file relate to the expiry date given in this record, until superseded by another contract expiry record.

For ordinary futures and options, there will be one expiry group. (In this case, the expiry group 1 field is analogous to the futures contract month field of the risk array record in the previous versions of the risk parameter file format.)

The volatility shift up and volatility shift down fields are percentages and are held as decimal numbers, e.g. 15% is held as 0.15.

Type	Opt	Description
Integer		Record Type - Always 50
Date		Expiry Date
Real		Discount Factor
Real		Volatility Shift Up (%)
Real		Volatility Shift Down (%)
Integer		Number of Expiry Groups
Date		Expiry Group 1
Date	Y	Expiry Group 2
Date	Y	Expiry Group 3
Date	Y	Expiry Group 4
Date	Y	Expiry Group 5
Date	Y	Expiry Group 6
Date	Y	Expiry Group 7
Date	Y	Expiry Group 8
Date	Y	Expiry Group 9
Date	Y	Expiry Group 10
Date	Y	Expiry Group 11
Date	Y	Expiry Group 12
Date	Y	Expiry Group 13
Date	Y	Expiry Group 14
Date	Y	Expiry Group 15
Date	Y	Expiry Group 16
Date	Y	Expiry Group 17
Date	Y	Expiry Group 18
Date	Y	Expiry Group 19

Date	Y	Expiry Group 20
Date	Y	Expiry Group 21
Date	Y	Expiry Group 22
Date	Y	Expiry Group 23
Date	Y	Expiry Group 24
Date	Y	Expiry Group 25
Date	Y	Expiry Group 26
Date	Y	Expiry Group 27
Date	Y	Expiry Group 28
Date	Y	Expiry Group 29
Date	Y	Expiry Group 30
Date	Y	Expiry Group 31
Date	Y	Expiry Group 32

4.18 Record Type 60: Series Details (Risk Array Record)

This is the risk array itself applying to the specific series identified by the preceding Combined Commodity, Contract and Contract Month.

Settlement / Closing price is expressed in a whole number of ticks for contracts quoted in points and ticks. For example, a price of 1 5/32 would appear as 37.

The composite delta is held to four decimal places.

The risk array values are given in a whole number of ticks.

Each value represents the loss (gain) per single long position. Here "long" refers to long futures, long puts and long calls.

Type	Opt	Description
Integer		Record Type - Always 60
Integer		Strike Price
String		Contract Type
Integer		Lot Size
Integer		Settlement Price
Real		Composite Delta
Integer		Loss Value 1
Integer		Loss Value 2
Integer		Loss Value 3
Integer		Loss Value 4
Integer		Loss Value 5
Integer		Loss Value 6
Integer		Loss Value 7
Integer		Loss Value 8
Integer		Loss Value 9
Integer		Loss Value 10
Integer		Loss Value 11

Integer		Loss Value 12
Integer		Loss Value 13
Integer		Loss Value 14
Integer		Loss Value 15
Integer		Loss Value 16

5 Record Formats – SP5

This format is the extended Fixed Format Record risk array format utilised by ICE.

For descriptions of the fields an allied notes see the CSV description.

5.1 Record Type 10: SPAN File Header Record

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 10
1	3	3	String		File Type
2	4	5	Integer		Format Version
8	6	13	Date		Business Date
2	14	15	String		File Identifier
8	16	23	Date		Creation Date
6	24	29	Time		Creation Time
3	30	32	Integer		Number of Scenarios

5.2 Record Type 11: Contract Type Mapping Record

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 11
2	3	4	String		Contract Type
1	5	5	String		Generic Contract Type
20	6	25	String		Contract Type Description

5.3 Record Type 12: Currency Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 12
3	3	5	String		Currency Code
20	6	25	String		Currency Description
2	26	27	Integer		Currency Exponent

5.4 Record Type 13: Currency Conversion Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 13
3	3	5	String		Contract Currency
3	6	8	String		Margin Currency
10	9	18	Real		Contract / Margin Currency multiplier (FX Rate)
6	19	24	Real		Percentage FX Shift Up
6	25	30	Real		Percentage FX Shift Down

5.5 Record Type 14: Intercontract Spread Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 14
3	3	5	String		Contract Group
6	6	11	Integer		Spread Priority
2	12	13	Integer		Spread Method Code – Always 10
6	14	19	Real		Spread Credit Rate (%)
7	20	26	Real		Offset Rate (For Spread Methods other than 10, this is an Integer value, whereas, for Methods 10 this is a real number)
2	27	28	Integer		Number of Legs
3	29	31	String		Exchange Code 1
3	32	34	String		Combined Contract 1
2	35	36	Integer		Tier Number 1
1	37	37	String		Spread Side 1
2	38	39	Integer		Delta/Spread Ratio 1
3	40	42	String		Exchange Code 2
3	43	45	String		Combined Contract 2
2	46	47	Integer		Tier Number 2
1	48	48	String		Spread Side 2
2	49	50	Integer		Delta/Spread Ratio 2
3	51	53	String	Y	Exchange Code 3
3	54	56	String	Y	Combined Contract 3
2	57	58	Integer	Y	Tier Number 3
1	59	59	String	Y	Spread Side 3
2	60	61	Integer	Y	Delta/Spread Ratio 3
3	62	64	String	Y	Exchange Code 4
3	65	67	String	Y	Combined Contract 4
2	68	69	Integer	Y	Tier Number 4
1	70	70	String	Y	Spread Side 4
2	71	72	Integer	Y	Delta/Spread Ratio 4

Field Type Changes	Old Type
Offset Rate	Integer

5.6 Record Type 15: Scenario Descriptions

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 15
3	3	5	Integer		Scenario Number
15	6	20	String		Scenario Description
3	21	23	Integer		Paired Scenario Number

5.7 Record Type 16: Margin Group Descriptions

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 16
3	3	5	String		Initial Margin Group
25	6	30	String		Initial Margin Group Description

5.8 Record Type 20: Exchange Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 20
3	3	5	String		Exchange Code
8	6	13	String		Exchange Short Name
2	14	15	String		File Identifier

5.9 Record Type 21: Position Split Allocation Details

Length	Type	Opt	Description
2	Integer		Record Type – Always 21
3	String		Contract Code
1	String		Contract Type
8	Date		Expiry Date
8	Integer		Strike Price
3	String		Mapped Contract Code
1	String		Mapped Contract Type
8	Date		Mapped Expiry Date
8	Integer		Mapped Strike Price
9	Real		Delta

5.10 Record Type 30: Combined Contract Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 30
3	3	5	String		Combined Contract Code
20	6	25	String		Combined Contract Name
3	26	28	String		Contract Group
3	29	31	String		Initial Margin Group
3	32	34	String		Margin Currency Code
4	35	38	Real		Extreme Price Shift
6	39	44	Real		Loss Covered (%)
10	45	54	Integer		Short Option Minimum Charge Rate
2	55	56	Integer		Strategy Spread Method Code
2	57	58	Integer		Interprompt Spread Method Code
2	59	60	Integer		Prompt Date Method Code
8	61	68	Date		End of Risk Period

5.11 Record Type 31: Month Tier Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 31
2	3	4	Integer		Number of Tiers
2	5	6	Integer		Tier Number 1
8	7	14	Date		Starting Expiry Group 1
8	15	22	Date		Ending Expiry Group 1
2	23	24	Integer	Y	Tier Number 2
8	25	32	Date	Y	Starting Expiry Group 2

8	33	40	Date	Y	Ending Expiry Group 2
2	41	42	Integer	Y	Tier Number 3
8	43	50	Date	Y	Starting Expiry Group 3
8	51	58	Date	Y	Ending Expiry Group 3
2	59	60	Integer	Y	Tier Number 4
8	61	68	Date	Y	Starting Expiry Group 4
8	69	76	Date	Y	Ending Expiry Group 4
2	77	78	Integer	Y	Tier Number 5
8	79	86	Date	Y	Starting Expiry Group 5
8	87	94	Date	Y	Ending Expiry Group 5
2	95	96	Integer	Y	Tier Number 6
8	97	104	Date	Y	Starting Expiry Group 6
8	105	112	Date	Y	Ending Expiry Group 6
2	113	114	Integer	Y	Tier Number 7
8	115	122	Date	Y	Starting Expiry Group 7
8	123	130	Date	Y	Ending Expiry Group 7
2	131	132	Integer	Y	Tier Number 8
8	133	140	Date	Y	Starting Expiry Group 8
8	141	148	Date	Y	Ending Expiry Group 8

5.12 Record Type 32: Leg Spread Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 32
3	3	5	Integer		Interprompt Spread Priority
10	6	15	Integer		Spread Charge Rate
2	16	17	Integer		Number of Legs
2	18	19	Integer		Tier Number 1
2	20	21	Integer		Delta Spread Ratio 1
1	22	22	String		Market Side 1
2	23	24	Integer		Tier Number 2
2	25	26	Integer		Delta Spread Ratio 2
1	27	27	String		Market Side 2
2	28	29	Integer	Y	Tier Number 3
2	30	31	Integer	Y	Delta Spread Ratio 3
1	32	32	String	Y	Market Side 3
2	33	34	Integer	Y	Tier Number 4
2	35	36	Integer	Y	Delta Spread Ratio 4
1	37	37	String	Y	Market Side 4

5.13 Record Type 33: Prompt Date Charge Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 33
2	3	4	Integer		Number of Expiry Groups
8	5	12	Date		Expiry Group 1
10	13	22	Integer		Spread Charge 1
10	23	32	Integer		Outright Charge 1
1	33	33	String		Delta Sign 1
8	34	41	Date	Y	Expiry Group 2

10	42	51	Integer	Y	Spread Charge 2
10	52	61	Integer	Y	Outright Charge 2
1	62	62	String	Y	Delta Sign 2
8	63	70	Date	Y	Expiry Group 3
10	71	80	Integer	Y	Spread Charge 3
10	81	90	Integer	Y	Outright Charge 3
1	91	91	String	Y	Delta Sign 3
8	92	99	Date	Y	Expiry Group 4
10	100	109	Integer	Y	Spread Charge 4
10	110	119	Integer	Y	Outright Charge 4
1	120	120	String	Y	Delta Sign 4

5.14 Record Type 34: Intercontract Tier Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 34
2	3	4	Integer		Number of Intercontract Tiers
2	5	6	Integer		Intercontract Tier Number 1
2	7	8	Integer		Starting Month Tier Number
2	9	10	Integer		Ending Month Tier Number 1
2	11	12	Integer	Y	Intercontract Tier Number 2
2	13	14	Integer	Y	Starting Month Tier Number 2
2	15	16	Integer	Y	Ending Month Tier Number 2
2	17	18	Integer	Y	Intercontract Tier Number 3
2	19	20	Integer	Y	Starting Month Tier Number 3
2	21	22	Integer	Y	Ending Month Tier Number 3
2	23	24	Integer	Y	Intercontract Tier Number 4
2	25	26	Integer	Y	Starting Month Tier Number 4
2	27	28	Integer	Y	Ending Month Tier Number 4
2	29	30	Integer	Y	Intercontract Tier Number 5
2	31	32	Integer	Y	Starting Month Tier Number 5
2	33	34	Integer	Y	Ending Month Tier Number 5
2	35	36	Integer	Y	Intercontract Tier Number 6
2	37	38	Integer	Y	Starting Month Tier Number 6
2	39	40	Integer	Y	Ending Month Tier Number 6
2	41	42	Integer	Y	Intercontract Tier Number 7
2	43	44	Integer	Y	Starting Month Tier Number 7
2	45	46	Integer	Y	Ending Month Tier Number 7
2	47	48	Integer	Y	Intercontract Tier Number 8
2	49	50	Integer	Y	Starting Month Tier Number 8
2	51	52	Integer	Y	Ending Month Tier Number 8

5.15 Record Type 35: Strategy Spread Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 35
6	3	8	Integer		Strategy Spread Priority
10	9	18	Integer		Spread Charge Rate
2	19	20	Integer		Number of Legs

8	21	28	Date		Expiry Group 1
2	29	30	Integer		Delta Spread Ratio 1
1	31	31	String		Market Side 1
8	32	39	Date		Expiry Group 2
2	40	41	Integer		Delta Spread Ratio 2
1	42	42	String		Market Side 2
8	43	50	Date	Y	Expiry Group 3
2	51	52	Integer	Y	Delta Spread Ratio 3
1	53	53	String	Y	Market Side 3
8	54	61	Date	Y	Expiry Group 4
2	62	63	Integer	Y	Delta Spread Ratio 4
1	64	64	String	Y	Market Side 4
8	65	72	Date	Y	Expiry Group 5
2	73	74	Integer	Y	Delta Spread Ratio 5
1	75	75	String	Y	Market Side 5
8	76	83	Date	Y	Expiry Group 6
2	84	85	Integer	Y	Delta Spread Ratio 6
1	86	86	String	Y	Market Side 6
8	87	94	Date	Y	Expiry Group 7
2	95	96	Integer	Y	Delta Spread Ratio 7
1	97	97	String	Y	Market Side 7
8	98	105	Date	Y	Expiry Group 8
2	106	107	Integer	Y	Delta Spread Ratio 8
1	108	108	String	Y	Market Side 8

5.16 Record Type 40: Contract Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 40
3	3	5	String		Contract Code
1	6	6	String		Generic Contract Type
20	7	26	String		Contract Description
3	27	29	String		Contract Currency
6	30	35	Integer		Tick Denominator
6	36	41	Integer		Minimum Price Fluctuation (in ticks)
14	42	55	Real		Tick Value
8	56	63	Real		Delta Divisor
6	64	69	Integer		Decimal Locator
6	70	75	Integer		Strike Denominator
7	76	82	Integer		Scanning Range (in ticks)
1	83	83	Integer		Settlement Style Method

5.17 Record Type 50: Contract Expiry Details

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 50
8	3	10	Date		Expiry Date
8	11	18	Real		Discount Factor
6	19	24	Real		Volatility Shift Up (%)
6	25	30	Real		Volatility Shift Down (%)

3	31	33	Integer		Number of Expiry Groups
8	34	41	Date		Expiry Group 1
8	42	49	Date	Y	Expiry Group 2
8	50	57	Date	Y	Expiry Group 3
8	58	65	Date	Y	Expiry Group 4
8	66	73	Date	Y	Expiry Group 5
8	74	81	Date	Y	Expiry Group 6
8	82	89	Date	Y	Expiry Group 7
8	90	97	Date	Y	Expiry Group 8
8	98	105	Date	Y	Expiry Group 9
8	106	113	Date	Y	Expiry Group 10
8	114	121	Date	Y	Expiry Group 11
8	122	129	Date	Y	Expiry Group 12
8	130	137	Date	Y	Expiry Group 13
8	138	145	Date	Y	Expiry Group 14
8	146	153	Date	Y	Expiry Group 15
8	154	161	Date	Y	Expiry Group 16
8	162	169	Date	Y	Expiry Group 17
8	170	177	Date	Y	Expiry Group 18
8	178	185	Date	Y	Expiry Group 19
8	186	193	Date	Y	Expiry Group 20
8	194	201	Date	Y	Expiry Group 21
8	202	209	Date	Y	Expiry Group 22
8	210	217	Date	Y	Expiry Group 23
8	218	225	Date	Y	Expiry Group 24
8	226	233	Date	Y	Expiry Group 25
8	234	241	Date	Y	Expiry Group 26
8	242	249	Date	Y	Expiry Group 27
8	250	257	Date	Y	Expiry Group 28
8	258	265	Date	Y	Expiry Group 29
8	266	273	Date	Y	Expiry Group 30
8	274	281	Date	Y	Expiry Group 31
8	282	289	Date	Y	Expiry Group 32

5.18 Record Type 60: Series Details (Risk Array Record)

Length	From	To	Type	Opt	Description
2	1	2	Integer		Record Type - Always 60
8	3	10	Integer		Strike Price
2	11	12	String		Contract Type
5	13	17	Integer		Lot Size
8	18	25	Integer		Settlement Price
9	26	34	Real		Composite Delta
7	35	41	Integer		Loss Value 1
7	42	48	Integer		Loss Value 2
7	49	55	Integer		Loss Value 3
7	56	62	Integer		Loss Value 4
7	63	69	Integer		Loss Value 5
7	70	76	Integer		Loss Value 6
7	77	83	Integer		Loss Value 7

7	84	90	Integer		Loss Value 8
7	91	97	Integer		Loss Value 9
7	98	104	Integer		Loss Value 10
7	105	111	Integer		Loss Value 11
7	112	118	Integer		Loss Value 12
7	119	125	Integer		Loss Value 13
7	126	132	Integer		Loss Value 14
7	133	139	Integer		Loss Value 15
7	140	146	Integer		Loss Value 16