

Common Clearing Link – Clearing Firm Testing Process

Introduction

The process by which clearing firms of CBOT and/or CME will verify that their trade processing and bookkeeping systems are ready for the launch of the common clearing link can be broken out into three overall phases: **clearing firm integration testing**, **clearing firm end-to-end testing**, and **clearing firm deliveries testing**.

Clearing firm integration testing will take place primarily during July and August. Its goal is to allow firms to test individual components of clearing functionality, piece by piece.

For example, in one of the very first parts of clearing firm integration testing, the CME clearing system will send TREX electronic trade confirmation messages to firms, in the same queue, containing on the one hand trades executed in CME products on GLOBEX, and on the other hand trades executed in CBOT products on e-cbot. Firms will be able to use these messages to verify that they can receive these trades and correctly load them to books.

To continue the example, in the next phase of integration testing, firms will be able to view these trades side by side in CME's Electronic Trade Posting application, and they will be able to make modifications to both CBOT trades and CME trades via either the browser-based user interface, or by sending in TREX change messages. This will allow firms to prove that they can send TREX change messages for electronic trades in either CBOT products or CME products, and that they can receive and successfully process confirmation messages of these changes sent back by the clearing system.

Integration testing will support testing by firms of all of the core functional changes associated with processing CBOT products through the common clearing link. It will allow identification and correction of any defects, and it will lay the groundwork for smooth end-to-end testing to follow.

Different parts of the integration testing process will occur at different times during July and August, but there will be substantial overlap between the parts.

Clearing firm end-to-end testing will begin after Labor Day, and run through September to the last business day in October. (If circumstances warrant, it will be extended into the first two weeks of November.)

End-to-end testing will put all components of the clearing process together, so that firms can test their systems' interaction with the clearing system end-to-end from trade submission or capture, all the way through balancing and margin calculation.

We will build upward from simpler test cycles, involving a small number of transaction types, to more complex test cycles, involving all transaction types. Similarly, firms will have an opportunity to test in both a scripted fashion, involving a comparatively small number of transactions, and an unscripted fashion, aimed at processing larger transaction volumes. This testing will also allow firms to verify that CME's clearing applications can provide adequate performance while processing both CBOT and CME business.

End-to-end test cycles will typically be run either on a once per week basis, or on a twice per week basis:

- **Once-per-week basis:** trade-related activity (trade submissions, give-ups, etc.) will occur either on Monday, or on the previous Saturday. On Tuesday morning, firms will submit PCS, and the end-of-day clearing cycle will be run. Clearing output, especially trade registers, will be available late Tuesday or early Wednesday. Firms will then have Wednesday, Thursday and Friday for checking results, resolving any problems discovered, and preparing for the next cycle.
- **Twice-per-week basis:** trade-related activity will occur either on Monday, or on the previous Saturday. Firms will submit PCS Monday evening or Tuesday morning, the end-of-day clearing cycle will be run, and clearing reports will be made available. Firms will have Wednesday for checking results and preparing for the next cycle. The second cycle of the week will begin on Thursday morning, with PCS being submitted Thursday evening or Friday morning, and clearing reports available later on Friday.

Initially, cycles will be run once per week, to provide firms with plenty of time to check results, analyze issues, resolve problems, etc. Twice-per-week cycles will be used for cases where it is important to roll from one day to the next, such as option expiration and assignment, and futures expiration and delivery processing, and holiday processing.

Three rounds of end-to-end testing: the cycles executed as part of the end-to-end test process will be broken out into three rounds:

- **First round: scripted, smaller data volumes:** these cycles will focus on verifying end-to-end functionality, and will make use of smaller volumes of test data and scripted processing.
- **Second round: scripted and unscripted, larger data volumes:** these cycles will allow firms to process volumes of test data as large as desired, in both a scripted and an unscripted manner.
- **Third round: initial launch period testing:** these cycles will allow firms to verify their ability to handle the initial launch period from November 24th through December 31st, when they will need to interact with the CME clearing system for the initial set of CBOT products to be converted, and with BOTCC for the remainder.

Clearing Firm Deliveries Testing

Clearing firm testing of the applications for physical delivery of CBOT products will begin in mid-August, and continue through October. There will be separate test processes for Treasuries, and for products delivered with and without electronic receipts.

Both clearing firm integration testing and end to end testing will provide an opportunity for testing the interface between the delivery process and position keeping. In the second round of clearing firm end-to-end testing, firms will be able to enter delivery intents as part of the test process, and verify the banking of the invoice amounts on the next day, and the position removal on the third day.

Use of both the user interface and the systems interfaces

At every stage of the testing process, firms will be able to verify functionality using both the clearing system's user interface, and the systems interface.

For example, firms will be able to submit open-outcry trades for both CBOT and CME products using either the on-line Trade Entry System (TES) application, or by sending TREX messages. Having submitted these trades via either mechanism, they will be able to view them in TES, and then modify them using either TES or by sending TREX messages.

We encourage firms to test their own systems using both the clearing system user interface and the systems interface.

Test participation

Clearing firm integration testing in July and August will be open to all firms, but participation will not be required. The integration testing process will be useful especially to service bureaus and vendors which provide and/or operate bookkeeping software for clearing firms, for firms which maintain their own bookkeeping systems, and for firms which wish to test earlier and/or more exhaustively.

Clearing firm end-to-end testing, in September and October, will involve all firms and service providers. To ensure a smooth launch of the common clearing link on November 24th, it is **mandatory** that all firms participate in the end-to-end test process.

Overlap with e-cbot simulation testing

Clearing firm end-to-end testing will overlap with "simulation testing" planned by CBOT for e-cbot users. Simulation testing will allow firms to see the entire end-to-end flow of data, from orders they enter into e-cbot to electronic trade confirmation messages received from the clearing system.

Firm readiness for testing

CME is currently setting up separate environments dedicated for firm testing for the common clearing link. Having separate, dedicated environments should allow the testing process to proceed smoothly. We will shortly be publishing details. Firms should plan during the July and early August time periods to work with CME's Client Management department to ensure that their own testing environments are correctly configured for connection to the dedicated testing environments.

Clearing Firm Integration Test Cycles

The individual test cycles which comprise the clearing firm integration test are as follows:

- **Master files and SPAN® files**
- **Electronic trade TREX messages**
- **Open-outcry trade TREX messages**
- **Electronic Clerk**
- **Hand-Held Terminals (HHT's)**
- **Give-up API**
- **Average Pricing System**
- **Wholesale Trades & EFP's**
- **Flex options**
- **PCS**
- **Trade Register**

Here is a detailed description of each cycle.

❖ **Master files and SPAN® files:**

This test will provide firms with sample “master data” files from the clearing system:

- **Combined (CBT-CME) normal SPAN files:** These will contain data for both CBOT and CME products and will allow firms to test their ability to run bookkeeping and to calculate margin requirements for customer accounts using the combined file.
- **Combined (CBT-CME-OCC) cross-margining SPAN files:** like the combined normal SPAN file, these will allow firms to test their ability to calculate margin requirements for accounts participating in the newly-expanded cross-margin program with the Options Clearing Corporation for broad-based equity index futures and options.
- **Settlement price files for both CBOT and CME:** these will allow firms to test their ability to read a settlement price file for CBOT contracts in the same format as is currently provided for CME contracts.
- **“Edit files”:** these files provide master data for trading firms, brokers, and products, and are typically used by firms to load data into their systems for use on the following trading day. This test cycle will allow firms to test their ability to read and use edit files for CBOT firms, brokers and products, which files are exactly in the format as currently provided for CME.

❖ **Electronic trade TREX messages:**

This will allow firms to test their TREX-based interaction with the clearing system for trades executed electronically, either on GLOBEX or e-cbot:

- **Combined feed of electronic trade confirmation messages:** In the same queue, firms will receive TREX electronic trade confirmation messages for trades in CME products executed on GLOBEX and for trades in CBOT products executed on e-cbot, and will be able to verify that they are able to correctly load these trades to books.
- **Combined submission of electronic trade change messages:** firms will be able to submit change messages for trades executed electronically on either GLOBEX or e-cbot, and will be able to verify that these changes were successfully applied.
- **Combined feed of electronic trade change confirmation messages:** firms receiving confirmation messages resulting from the application of changes to electronic trades, will receive such messages for both e-cbot trades and GLOBEX trades, and will be able to verify in both cases that they are able to receive and process these confirmation messages.

❖ **Open outcry trade TREX messages:**

This will allow firms to test their TREX-based interaction with the clearing system for trades executed via Open Outcry, for both CBOT and CME products, exactly analogously to the testing for electronic trades:

- **Combined submission of open-outcry trade submission messages:** firms will be able to verify that they are able to correctly submit TREX messages for pit trades for both CBOT and CME products.
- **Combined submission of open-outcry change and deletion messages:** firms will be able to verify that they are able to correctly submit TREX messages to modify data for unmatched open-outcry trades, or delete such trades, or modify non-critical data for such trades post-match.
- **Combined feed of open-outcry trade confirmation messages:** firms receiving TREX confirmation messages when open-outcry trades match, will be able to verify that they are able to correctly receive and process these messages for both CBOT and CME products.

❖ **Electronic Clerk:**

This testing will allow firms:

- **Receipt of EC trades:** To verify that they are able to correctly receive and process TREX messages for trades executed via CBOT's Electronic Clerk, in an exactly analogous manner as firms currently receive TREX messages for trades executed via CME's TOPS system.
- **Submission of EC trades:** To verify that such trades can then be submitted to clearing as normal open-outcry trades.

❖ **Hand-Held Terminals (HHT's):**

This testing will build upon the tests for open-outcry trades, to allow firms to verify special features associated with trades executed via HHT's:

- **Feed of HHT trade confirmation messages:** firms will receive TREX messages for trades executed via HHT's, and will be able to verify that they are able to read these messages and successfully load these trades to books.
- **Submission of change or delete messages for HHT trades:** firms will be able to submit change or delete TREX messages for unmatched HHT trades, and will be able to verify that these changes are successfully applied and that the trades are updated on the HHT's.
- **Receipt of change messages for HHT trades originating from the HHT:** for HHT trades subsequently modified via the HHT, firms will be able to verify that they are able to receive and correctly process confirmation messages for these changes.
- **Receipt of match confirmation messages for HHT trades:** when trades executed via HHT match, firms will be able to receive TREX match confirmation messages for these trades, exactly as they would for a TREX match confirmation message for any trade executed via open outcry for either CBOT or CME products, and in addition will be able to verify that the trade status is updated to matched on the HHT.

❖ **Give-up API**

This area of testing will allow firms to verify that they are able to use CME's Give-Up API, as implemented in the Allocate/Claim System (ACS), for trades in CBOT products, exactly as it is currently used for trades in CME products:

- **Marking of the original e-cbot trade for give-up at order submission time:** this will allow firms to verify that trades marked for give-up when e-cbot orders are submitted, correctly flow into the Allocate/Claim System, both with and without the carrying firm specified on the order.
- **Marking of the original open-outcry CBOT trade for give-up at trade submission time:** analogously, this will allow firms to verify that CBOT open-outcry trades marked for give-up on the trade submission TREX message, correctly flow into the Allocate/Claim system, both with and without the carrying firm specified on the trade submission message, in exactly the same manner as for CME products.
- **Routing trades to ACS via change messages:** this will allow firms to verify that they are able to route trades in CBOT products to ACS via submission of TREX change messages, for both open-outcry trades and e-cbot trades, in exactly the same manner as is used for CME products.
- **Sending functionality of the Give-Up API:** this testing will allow firms to verify that they can correctly submit TREX messages associated with the Give-Up API, for CBOT products in exactly the same manner as for CME products, including allocations, acceptances, releases and reversals.
- **Receiving functionality of the Give-Up API:** this will analogously allow firms to verify that they can receive and process all TREX messages for the Give-Up API sent by the clearing system to firms.

❖ **Average Pricing System**

This testing will allow firms to verify that they are able to receive and process APS routing files for trades in CBOT products, analogously to the way they process APS routing files for trades in CME products.

❖ **Wholesale (Block) Trades & EFP's**

This testing will allow firms to verify that they are able to receive and process TREX trade confirmation messages for EFP (including EFR and EFS) and wholesale trades in CBOT products, exactly as they are currently received for CME products.

❖ **PCS**

This testing will allow firms to verify that they can correctly create and submit PCS files for positions in CBOT products as they do for positions in CME products, both at the intraday cycle and the end-of-day cycle.

❖ **Trade Register**

This testing will allow firms to verify that they are able to process Trade Register datafiles for both CBOT and CME products. We will provide Trade Register reports and datafiles:

- Showing all trade types in all products for both CBOT and CME
- Illustrating all fractional price formats
- Showing transactions resulting from exercise & assignment in both CBOT and CME products
- Showing transactions resulting from delivery
- Showing the banking of both delivery invoice amounts and delivery storage amounts

Clearing Firm End to End Cycles (September and October)

As described above, end-to-end cycles will be broken out into once-per-week executions, and twice-per-week executions:

- ❖ One test per week executions:
 - Trade activity either on Monday, or on the previous Saturday
 - PCS submission from firms on Tuesday
 - Clearing output provided by end of Tuesday or early Wednesday
 - Wednesday for review of results
 - Thursday and Friday for implementation of corrections, planning for next test

- ❖ Two tests per week executions:
 - Trade activity either on Monday, or on the previous Saturday
 - PCS submission Monday evening or Tuesday morning
 - Clearing output by end of Tuesday or early Wednesday
 - Wednesday for review of results
 - Trade activity on Thursday
 - PCS submission Thursday evening or Friday morning
 - Clearing output provided by end of Friday

As described above, the process will be broken out into three rounds: the first scripted, and/or with a smaller subset of data, the second both scripted and unscripted, and aimed at running full days' business, and the third round will allow firms to verify their ability to handle the initial launch period with trades being sent to two venues.

First Round – Scripted and/or Smaller Subset of Data

❖ Cycle 0 – Sep. 2-5: Electronic Trades and Balancing dry run

And

❖ Cycle 1 – Sep. 8-12: Electronic Trades and Balancing

These two cycles will be similar, with the exception that participation in cycle zero will not be mandatory. Cycle zero will be aimed at ensuring that the end-to-end testing process itself runs smoothly. These cycles are aimed at providing end-to-end testing for trades executed electronically, including the ability to give up these trades, and to accept data for such trades on the Trade Register. Firms will:

- Receive TREX confirmation messages for both CBOT and CME electronic trades
- Submit TREX change messages for electronic trades in both CBOT and CME products; receive TREX electronic trade change confirmation messages for both CBOT and CME products.
- Do give-up activity resulting from these electronic trades in both CBOT and CME products.
- Submit PCS in both CBOT and CME products.
- Receive the resulting Trade Register datafiles and reports, verify that they correctly balance.

❖ **Cycle 2 – Sep. 15-19: Add in Open-Outcry Trades and other transaction types**

This test cycle will repeat the activity in the first cycle for electronic trades, and will add activity for all other transaction types. Firms will:

- Submit TREX messages for open-outcry trades for CBOT products and CME products together; submit TREX change and delete messages for such trades, receive trade confirmation messages when trades match.
- Receive trade confirmation messages for trades executed via HHT's, load these trades to books, receive change confirmation messages for such trades when modified via the HHT, submit change or delete messages for such trades, and receive match confirmation messages when such trades match.
- Receive Electronic Clerk trade confirmation messages.
- Receive Wholesale Trades and EFP trade confirmation messages; process wholesale and EFP (and EFR and EFS) trades for CBOT as they do for CME.
- Submit TREX messages for transfers for CBOT products and CME products together, submit TREX change and delete messages for transfers, receive confirmation messages when transfers match.

❖ **Cycle 3 – Sep. 22-24: Option Expiration, and Delivery Invoice Amounts**

The next two test cycles will add in the functionality associated with option exercise and assignment, banking of delivery invoice charges for physically delivered CBOT futures, and position removal associated with physical delivery. Firms will:

- For options prior to expiration, submit early exercise notices for option positions for both CBOT and CME products.
- For options at expiration, submit out-of-the-money exercise notices and in-the-money abandonment notices, for both CBOT and CME products.
- Receive combined trade registers and other reports, showing for both CBOT and CME products, both prior to expiration and at expiration, options removed by exercise, options removed by assignment, options expired, futures created from exercise, and futures created from assignment.
- Received combined trade registers showing banking of delivery storage charges for CBOT products, and delivery invoice amounts for CBOT products with this test day being the invoice day.

❖ **Cycle 4 – Sep. 25-26: Post-expiration**

This cycle continues cycle three, and will allow firms:

- To verify that start-of-day positions correctly account for options exercised, assigned and expired on the previous day, and for futures transactions resulting from exercise and assignment on the previous day.
- To see the effect of position removal for physically-deliverable CBOT futures positions on delivery day, and for cash-settled CBOT futures on the day after maturity.

Second Round – Unscripted, and Larger Data Volumes

As described above, the second round of end-to-end testing will repeat end-to-end cycles previously executed, but will allow firms to test with larger volumes of data and in an unscripted as well as a scripted fashion.

❖ Cycle 5 – Sep. 29 through October 3: Electronic Trades and Balancing

This cycle will repeat cycle 1, but provide firms with a full day's worth of electronic trades in CME products, and a substantial amount of electronic trades in CBOT products. Firms will again have the opportunity to perform give-up activity and balance to the Trade Register.

❖ Cycle 6 – October 6 through October 10: All transaction types

This cycle repeats cycle 2, but will allow firms the opportunity to test large transaction volumes for all transaction types for all CBOT and CME products.

Third Round – Initial Launch Period

The three cycles in this final round of testing will focus on the initial launch period, from November 24th through December 31st, when firms will need to direct clearing processing to CME for the initial set of CBOT products, and to BOTCC for the products not being converted until January 2nd.

❖ Cycle 7 – October 13 through October 17: Electronic Trades and Balancing

This cycle will allow firms to test their ability to process trades for CME products and the initial set of CBOT products through the CME clearing system, while continuing to use BOTCC for the remaining CBOT products.

❖ Cycle 8 – October 20 through October 24: All Transaction Types – Option Expiration

This cycle repeats the process of testing the ability to process some CBOT products at CME and some at BOTCC, while adding in all transaction types and simulating an option expiration.

❖ Cycle 9 – October 27 through October 31: All Transaction Types – Post-expiration

This cycle repeats cycle 8 while simulating the day after expiration.

Contingency

This test schedule allows the first two weeks of November for contingencies, if test execution takes longer than scheduled or firms need additional testing.

No testing will be performed during the week beginning November 17th, which is the final week prior to launch for the initial set of CBOT products.

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