

# T+2 Industry Test Plan

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## T+2 Industry Test Plan

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## 1 Background

Currently, the settlement period for security trades in North America is transaction date (T) plus three business days, commonly referred to as T+3. However, subsequent to the move by the European Union to a T+2 settlement cycle in 2014, the United States announced in late 2014 that they would similarly move to T+2.

The Canadian Securities Administrators (CSA) has determined that due to the interconnectedness of the Canadian and American markets, Canada must move in tandem with the United States to a T+2 environment. The scheduled implementation date is September 5, 2017.

Moving to T+2 offers the following key benefits:

- Provides an uniform settlement period aligned with the United States for settling securities by T+2
- Reduces counterparty, market and liquidity risks by reducing both outstanding settlements and their associated replacement cost risks
- Increases automation of operational processes across organizations, including:
  - Dematerialization
  - Same-day affirmation (SDA)
  - Alignment between linked markets
  - Streamlined trade corrections

As a result, the Canadian Capital Markets Association (CCMA) was established to coordinate Canadian efforts to shorten the settlement cycle. The CCMA has set up a T+2 Steering Committee (T2SC) and working groups to coordinate the activities that will ensure a smooth transition to T+2 for the Canadian market. CDS, as a member of the CCMA Operations Working Group (CCMA OWG), developed this test plan for execution in a T+2 designated region during Q2 2017.

CDS will facilitate end-to-end testing for the Canadian market, as CDS is Canada's clearing and settlement facility. CDS will support DTCC T+2 testing by providing reports and reconciliation for U.S. trade activity.

## 2 Testing by individual organizations

Members are encouraged to work with all applicable stakeholders to develop and execute robust and comprehensive internal T+2 test plans.

While developing internal test plans, organizations should consider the following:

- The impact of T+2 changes on their system(s)
- The need to create representative test data
- Scheduling their internal testing to be prepared for industry testing

Test data volumes for double settlement should also be considered– i.e. upon implementation, a single calendar day will have to accommodate both the last T+3 and the first T+2 settlements.

Testing should include people, processes, and technology affected by the shortened settlement cycle, such as:

- Internal system and data changes
- Internal process adjustments
- Operating procedures and documentation updates
- Regression testing on upstream and downstream systems, data, and processes
- Vendor and service bureau changes affecting the organization
- Stress testing using the double settlement day volume

### 3 CDS industry testing

The following sections cover T+2 testing for Canadian trades.

#### 3.1.1 Participation

Although it is expected that most exchanges, service providers and CDS participants will voluntarily take part in industry testing, testing will be voluntary.

The deadline for participants to indicate they will participate is **November 30, 2016**.

#### 3.2 Out of scope activities

Activities unaffected by the shortened settlement cycle will be excluded from industry testing. The following activities have been identified as out of scope:

- Deposits
- Withdrawals
- Pledge/collateralization
- Northbound/southbound movements
- International movements
- Direct participant (DP) trade matching

#### 3.3 Testing process

The CDS industry T+2 testing is designed to support full end-to-end testing including:

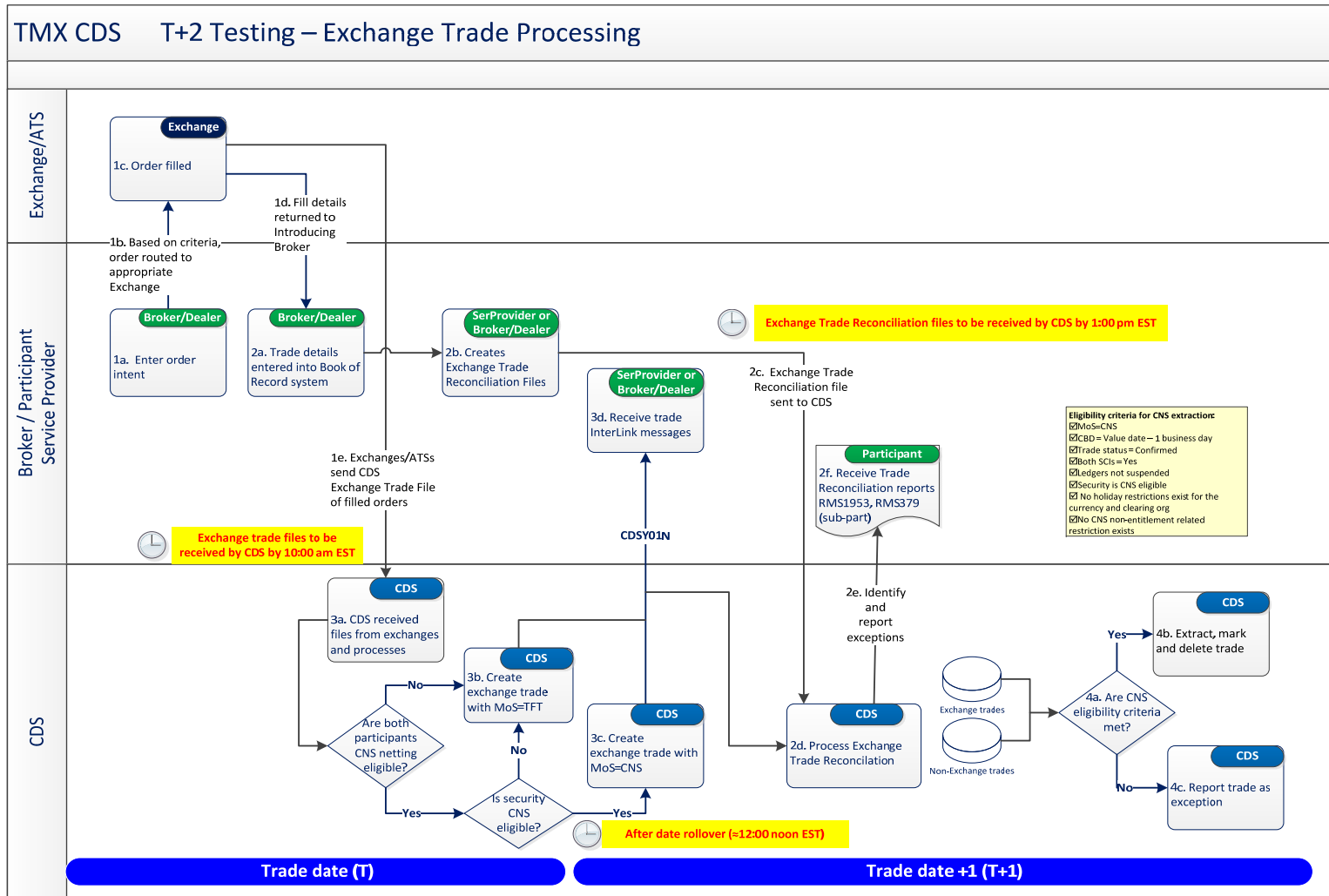
- Entry of exchange trade orders by participants
- Execution of orders by exchanges
- Transfer of exchange trade files from exchanges to CDS
- Entry and confirmation of non-exchange trades in CDSX by participants and service bureaus
- Extraction, netting and marking of CNS eligible trades
- Settlement of TFT trades and outstanding CNS positions
- Creation of outbound files
- Execution of trade reconciliation

### 3.4 Test scenarios

- End-to-end testing will be supported, in order to allow firms to test the full trade lifecycle from their internal trade order systems to CDS post-trade settlement.
  - CDS will partner with NEO Aequitas Exchange and TSX to participate in T+2 testing to enable firms to conduct full trade end-to-end lifecycle testing
  - Testing will include both exchange and non-exchange trades
  - Participants are encouraged to set up testing partners to facilitate testing data
- Corporate actions will be executed in the test environment, allowing testing of the following impacts:
  - Dividend event to test the shortened settlement period between ex-date and record date
  - Stock split with due bill event to test the shortened settlement period between the ex-date and due bill redemption date
- The following exception scenarios are in scope:
  - United States markets open/ Canadian markets closed
  - Canadian markets open/United States markets closed
  - Erroneous exchange and/or ATS trade file with incorrect value dates
- Expiry, options exercised and assigned file for CDCC

### 3.4.1 TMX CDS T+2 exchange trade processing

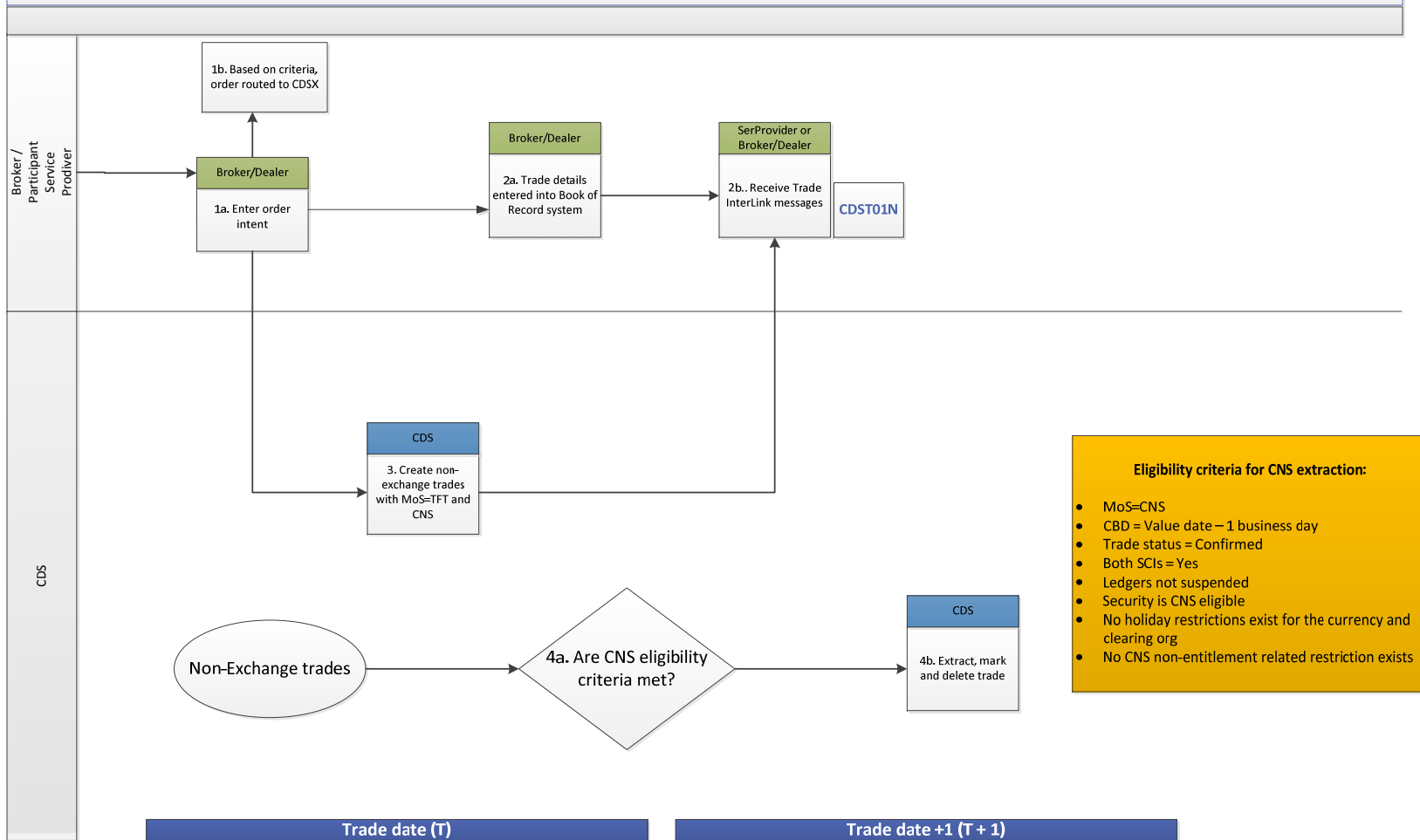
The following illustrates how exchange trade processing will be tested.



### 3.4.2 TMX CDS T+2 non-exchange trade processing

The following illustrates how non-exchange trade processing will be tested.

#### TMX CDS T+2 Testing – Non-Exchange Trade Processing



## 4 NEO Aequitas Exchange

NEO Aequitas Exchange's GTE test environment will be available during the T+2 Q2 2017 testing period for participants to enter orders.

The following sections cover the data, activities and contacts for NEO Aequitas testing.

### 4.1 NEO Aequitas test calendar

For more information, see 6.6 Test calendar.

### 4.2 NEO Aequitas test activities

NEO Aequitas will test order entry during a dedicated trading cycle.

#### 4.2.1 Trading cycle

NEO Aequitas Exchange will provide a dedicated trading cycle for T+2 testing in NEO Aequitas' GTE test environment:

- All trading books will be available:
  - Lit
  - NEO
  - Cross
  - SST
- The following will be the daily trading schedule for each book:
  - **Pre-Trading:** 5:55 – 6:00 am EST
  - **Regular Trading:** 6:00 – 9:45 am EST
  - **Post Close:** 9:45 – 9:55 am EST
- The daily trading schedule excludes opening or closing auctions
- NEO Aequitas will send the daily Exchange Trade File to CDS before 10:00 am EST

#### 4.2.2 Order entry

NEO Aequitas will support the following trade types for testing:

- One or more trades in the SST book for each of the special settlement terms:
  - Cash
  - Cash today
  - Future settlement (including T+3 and later)
- A cross with each of the special settlement terms
- A trade correction, where the settlement date changes

**Participants are encouraged to include the trade types tested by NEO Aequitas in their test plans.**

### 4.3 NEO Aequitas test securities

A list of NEO Aequitas test securities will be issued at a later date.

#### 4.4 NEO Aequitas contact information

The following are the Aequitas contacts identified for testing.

Names	Role	Email address	Telephone number
Janet Hall	Business Analyst (primary contact)	<a href="mailto:janet.hall@aequin.com">janet.hall@aequin.com</a>	416-933-5907
Erik Sloane	Head of Product Management (secondary contact)	<a href="mailto:erik.sloane@aequin.com">erik.sloane@aequin.com</a>	416-933-5904
Lloyd Clarke	Head of Business Operations	<a href="mailto:lloyd.clarke@aequin.com">lloyd.clarke@aequin.com</a>	416-933-5913
Trading Services	Business Operations Service Desk	<a href="mailto:NEOTradingServices@aequin.com">NEOTradingServices@aequin.com</a>	416-933-5950

## 5 TSX Exchange

### 5.1 TSX Test overview

TSX Markets' GTE test environment will be available during the T+2 Q2 2017 testing period for participants to enter orders.

### 5.2 TSX Test calendar

TSX will configure their trading calendar to accommodate the needs of the testing community.

### 5.3 TSX Test activities

TSX will test customer order entry/execution during a dedicated trading cycle.

#### 5.3.1 Trading cycle

TSX will provide a dedicated trading cycle for T+2 testing in TSX Markets' GTE test environment:

- Customer order entry/executions
- GTE connected to EIS Acceptance 2
- EIS Acceptance 2 to generate and send clearing file with new default of T+2 to CDS
- Network to confirm applicable ports/firewalls between GTE and EIS Acceptance 2
- Send a trade file with erroneous value date (i.e. exception testing)
- TSX will send the daily Exchange Trade File to CDS before 10:00 am EST

#### 5.3.2 Order entry

TSX Markets encourages participants to include the following trade types in their respective test plans:

- One or more trades in the SST book for each of the special settlement terms:

- Cash
- Cash today
- Future settlement (including T+3 and later)
- A cross with each of the special settlement terms
- A trade correction, where the settlement date changes

### 5.4 TSX Test securities

TSX Markets will provide a list of their test securities to accommodate specific testing needs at a later date.

### 5.5 TSX contact information

The following table lists the primary contact for TSX.

Business	Names	Email address	Telephone number
TSX Markets	Mark Jarrett	<a href="mailto:Mark.Jarrett@tsx.com">Mark.Jarrett@tsx.com</a>	416-947-4693

## 6 CDS testing

### 6.1 Test environment

CDS will designate the CDS Z1 region to execute testing from April 13, 2017 through May 26, 2017. This test region is the same one used during CNS Novation testing in Q3 2016.

### 6.2 Process and timelines

T+2 testing will occur during Q2 2017, from mid-April to end of May.

- The timeline will occur in two week intervals:
  - Week 1 and 2: Test period
  - Week 3 and 4:
    - Reassessment and defect testing period
    - Reset test data
  - Week 5 and 6: Final test period
- Trades entered during the first day of each test period will have T+3 settlement to allow testing of a dual settlement day on Day 4
- Production security numbers will be used
- Security positions and cap will be provided
- Reports, files and messages will be provided in the test region
- CDSX will be available for testing daily from 07:00 am EST to 10:00 am EST
- Payment exchange will be processed daily at 10:00 am EST for both CAD and USD
- The end of day batch will run daily at 10:30 am EST
- U.S. and Canadian funds holidays will be included
- Business testing days will match the calendar days

### 6.3 Test overview

The following table provides additional details about the testing process and timelines.

Test component	Details
External testing period	Thursday, April 13, 2017 to Wednesday, May 26, 2017
Participant Z1 user access	<ul style="list-style-type: none"> <li>Participants will be provided with test user IDs and passwords for Z1</li> <li>Participants will be required to access Z1 online using the user ID and password provided prior to the start of the external testing period</li> <li>RMS reports are viewable, not printable</li> </ul>
Connectivity testing	Participants and Service Bureaus will be required to complete connectivity testing prior to the start of the external testing period
Daily schedule	<ul style="list-style-type: none"> <li>The Z1 online region will be available from 7 a.m. EST to 10:00 a.m. EST</li> <li>Payment exchange will be processed each test day at 10:00 a.m. EST</li> <li>The overnight batch process will be executed every test day</li> </ul>
Syncing data prior to test	<ul style="list-style-type: none"> <li>Before the start of testing, securities and holidays must be synchronized with service bureaus/participants</li> <li>Ledger adjustments will be entered by CDS to create security ledger positions; CDSU01N messages will be generated by CDS</li> </ul>

### 6.4 Participant test preparation activities

The following will be the test preparation activities for participant testing.

	Activity	Date
1.	Confirm participation in external test via group email address ( <a href="mailto:CDSTestingSupport@tsx.com">CDSTestingSupport@tsx.com</a> )	By November 30, 2016
2.	Provide test CUIDS via group email address ( <a href="mailto:CDSTestingSupport@tsx.com">CDSTestingSupport@tsx.com</a> )	By November 30, 2016
3.	Confirm subscription requirements (files and messaging) via group email address ( <a href="mailto:CDSTestingSupport@tsx.com">CDSTestingSupport@tsx.com</a> ) See 6.5.5 File and InterLink subscriptions for a list of available files and messages	By November 30, 2016

	Activity	Date
4.	Provide contact information (email addresses and phone numbers) via group email address ( <a href="mailto:CDSTestingSupport@tsx.com">CDSTestingSupport@tsx.com</a> ) for: <ul style="list-style-type: none"> <li>• Business contact(s)</li> <li>• Technical contact(s) for FTP setup and connectivity testing</li> <li>• Technical contact(s) for MQ setup and connectivity testing</li> </ul>	By November 30, 2016
5.	Perform connectivity testing (files and messaging)	Q1 2017
6.	Verify online access to Z1 region using test IDs	Q1 2017

## 6.5 Test data

The following sections cover the data that will be used during testing.

### 6.5.1 Securities

A list of the production security numbers that will be used for external testing will be provided at a later date.

A security position of 1,000,000 for each security will be credited to each participant's SA000 as part of data set-up.

### 6.5.2 Funds

Each participant will be provided with the following CAPs:

- 500,000,000 CAD
- 500,000,000 USD

### 6.5.3 Exchange trades

Participants will enter exchange trades through their brokers/trade order systems.

### 6.5.4 Non-exchange trades

Participants will arrange with the counterparty of their choice to input non-exchange trades. Participants will be required to contact their counterparty and/or T+2 test partner to arrange for confirmation of the trades.

### 6.5.5 File and InterLink subscriptions

Each service bureau and participant will identify their file and message subscription requirements for the test environment.

The following are the available subscription items.

- **Inbound/outbound messages:**
  - CDST\*
  - CDSY\*
  - CDSA\*
  - CDSU01N
  - CDSX01N
  - CDSX03N
  - CDSN01N
- **Inbound files:**
  - Exchange trade reconciliation
- **Outbound files:**
  - Ledger update file (0001)
  - CNS Activity file – EOD (0006)
  - CNS Activity file – BOD (0031)
  - CNS Position file (0010)
  - Trade file – EOD (0002)
  - Trade file – BOD (0009)

**Note:** FTP reports are not supported.

### 6.5.6 RMS reports

RMS report IDs that apply to external testing will have a suffix of D. For example, the external testing version of the report ID for the Daily Transactions Report is TON01000230D.

CDS will generate the following reports during testing.

Report ID	Report Name	Timing
XXXA0002536D	ALLOTTED TRADES-BOD REPORT	BOD
XXXLL000369D	CLAIMS FOR SETTLED TRADES AND OUTSTANDING CNS POSITIONS REPORT	EOD
XXXLL000300D	CNS TRADE EXCEPTIONS REPORT	Intraday
XXXLL000439D	CNS ACTIVITY REPORT	EOD
XXXLL000010D	CNS CASH SUMMARY REPORT - POST CNS/BNS	BOD
XXXLL000229D	CNS MARK DIFFERENCE DETAILS REPORT	BOD
XXXLL000230D	DAILY TRANSACTION REPORT	EOD
XXXLL002194D	DOMESTIC EXCHANGE TRADE REPORT	BOD
XXXLL000239D	DUE BILL CALCULATION REPORT	EOD
XXXA0001953D	EXCHANGE TRADE RECONCILIATION REPORT (DOMESTIC)	BOD
XXXLL000090D	FINAL CONSOLIDATED CASH RECAP REPORT	Intraday
XXXLL000227D	OUTSTANDING CNS POSITION UPDATE REPORT	BOD
XXXLL000073D	OUTSTANDING CONFIRMED TRANSACTIONS REPORT	EOD
XXXLL001949D	OUTSTANDING EXCHANGE TRADE REPORT	EOD

Report ID	Report Name	Timing
XXXLL000217D	OVERNIGHT PAYMENT RELEASE REPORT	BOD
XXXLL000201D	PROJECTED PAYMENT REPORT FOR PARTICIPANTS	EOD
XXXA0000038D	SETTLED TRANSACTIONS REPORT	OR
XXXLL001912D	SUMMARY OF CONSOLIDATED PAYMENT REPORT	EOD
XXXLL000016D	SUMMARY OF OUTSTANDING CONFIRMED TRANSACTIONS REPORT	BOD
XXXLL000219D	SUMMARY OF PAYMENT RELEASE REPORT	EOD
XXXLL001910D	SUMMARY OF PROJECTED PAYMENT REPORT FOR PARTICIPANTS	EOD
XXXLL002454D	UNSETTLED NON EXCHANGE TRADE REPORT - POST BNS	BOD
XXXLL001951D	UNSETTLED NON EXCHANGE TRADE REPORT - PRE BNS	BOD
XXXA0000080D	UNSETTLED TRANSACTIONS REPORT	OR
XXXLL000394D	VALUE-DATED CNS POSITION UPDATE REPORT	BOD

**XXXA = CUID**

**XXXLL = Ledger**

**BOD = Beginning of day report**

**EOD = End of day report**

**OR = On request report**

6.6 Test calendar

The following calendars provide an overview of the testing schedule.

April 2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	Data set-up	Data set-up	Data set-up	<ul style="list-style-type: none"> <li>✓ Testing begins</li> <li>✓ Receive T+3 trade file</li> </ul>	Good Friday: CDS closed	15
16	<ul style="list-style-type: none"> <li>✓ Receive T+2 trade file</li> <li>✓ DIV ex-date</li> </ul>	<ul style="list-style-type: none"> <li>✓ Receive T+2 trade file</li> <li>✓ DIV record date</li> <li>✓ SS with due bills record date</li> </ul>	<ul style="list-style-type: none"> <li>✓ Receive T+2 trade file</li> <li>✓ Double settlement date</li> </ul>	Holiday processing: <ul style="list-style-type: none"> <li>✓ Market open in U.S./ Closed in Canada</li> <li>✓ Receive T+2 trade file</li> </ul>	Receive T+2 trade file	22
23	<ul style="list-style-type: none"> <li>✓ Receive T+2 trade file</li> <li>✓ DIV payable date</li> </ul>	<ul style="list-style-type: none"> <li>✓ Receive T+2 trade file</li> <li>✓ SS with due bills ex-date</li> </ul>	Holiday processing: <ul style="list-style-type: none"> <li>✓ Market open in Canada/ Closed in U.S.</li> <li>✓ Receive T+2 trade file</li> </ul>	SS due bill redemption date	<ul style="list-style-type: none"> <li>✓ Last settlement date</li> <li>✓ SS with due bills CDS payable date</li> </ul>	29
30						

May 2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Review	2 Review	3 Review	4 Review	5 Review	6
7	8 Reset data in region	9 Data set-up	10 Data set-up	11 Receive T+3 trade file	12 Holiday processing: ✓ Market open in Canada/Closed in U.S. ✓ Receive T+2 trade file	13
14	15 ✓ Receive T+2 trade file ✓ DIV ex-date	16 ✓ Receive T+2 trade file ✓ DIV record date ✓ SS with due bills record date ✓ Double settlement date	17 Holiday processing: Market open in U.S./ Closed in Canada	18 Receive T+2 trade file	19 Receive T+2 trade file	20
21	22 Victoria Day: CDS closed	23 ✓ Receive T+2 trade file ✓ DIV payable date	24 ✓ Receive T+2 trade file ✓ SS with due bills ex-date	25 SS due bill redemption date	26 ✓ Last settlement date ✓ SS with due bills CDS payable date	27
28	29	30	31			

### 6.7 CDS Test activities

The following table outlines the test activities that will be performed daily during the test period.

Daily schedule			
Time (EST)	Activity	Details	Messages distributed
7:00 am	Z1 online region available	TFT settlement	CDSU01N
		Intra-day CNS settlement	CDSU01N, CDSX01N
		Non-exchange trade entry and confirmation transactions	CDST01N, CDST10N
10:00 am	Payment exchange executed		CDSN01N
	CDS receives trade files from exchanges		
10:30 am	Z1 online region <b>unavailable</b>		
11:00 am to 5:00 pm	Overnight batch executed	EOD reports created	
		EOD files created	
		DATE ROLLOVER	CDSN01N
		Exchange trade files processed Trade extraction, netting and marking	CDSU01N, CDSX01N, CDSX03N
		CNS reports created	
		BOD files created	
		Exchange trade notification messages sent	CDSY01N
		CNS/BNS Settlement	CDSU01N, CDSX01N

Daily schedule			
Time (EST)	Activity	Details	Messages distributed
		Participant version of EOD and BOD files created Trade reconciliation process executed Email notification sent to participants	
By 1:00 pm	CDS receives trade reconciliation files from service bureaus and participants		

### 6.8 Test securities

The following are the identified test securities.

Security number	Security short name	Exchange

## 7 DTCC testing

DTCC has published their industry T+2 test framework and schedule on the DTCC website. As part of DTCC's test, CDS participants will submit their trade orders to the U.S. exchanges for execution in the U.S. market and settlement in NSCC.

CDS will provide the following support to participants submitting orders for DTCC testing:

- **NSCC/DTCC RMS reports:** CDS will load test reports received from DTCC into RMS
- **International trade reconciliation:** NSCC and participants /service bureaus will forward their test ITRS files to CDS. CDS will execute the reconciliation process, which will generate reports in RMS

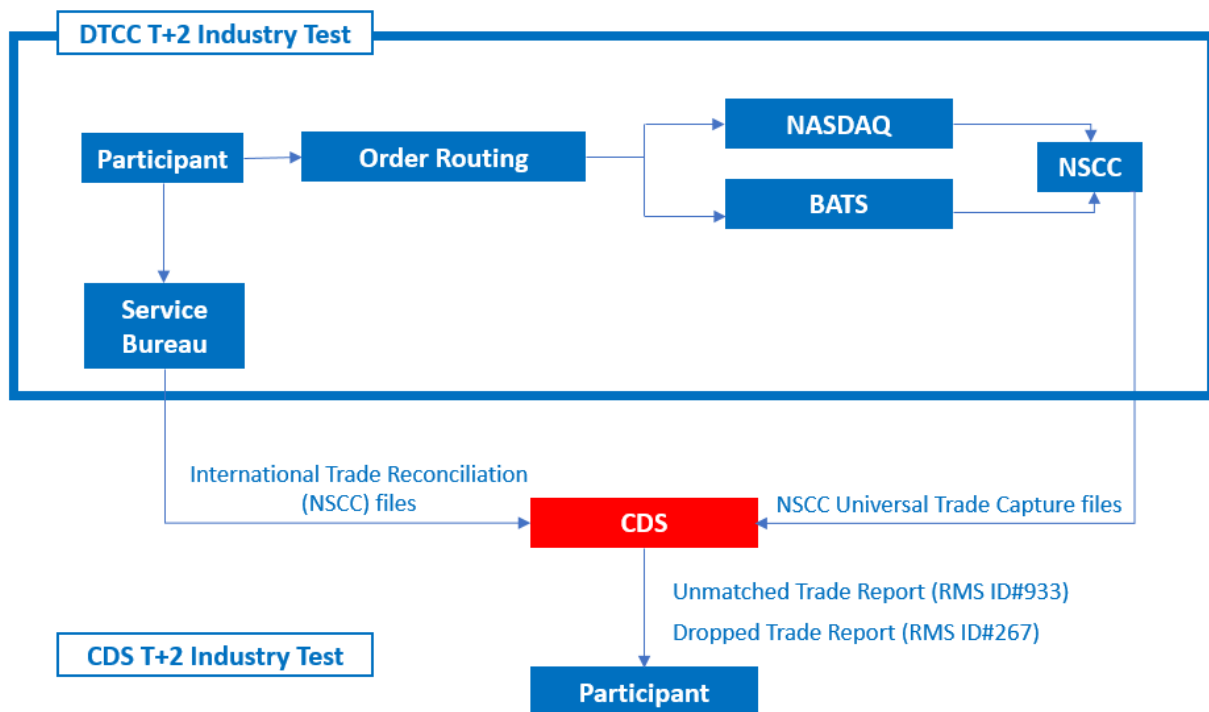
- **Locked-in trade reconciliation:** NSCC and participants/service bureaus will forward their test LTRS files to CDS. CDS will execute the reconciliation process, which will generate reports in RMS

CDS will provide support during five business testing days within the DTCC testing period, which CDS will announce at a later date.

Participants/service bureaus must advise DTCC/NSCC to include their trade details in the files sent to CDS.

**Note:** Northbound and southbound movements are out of scope for CDS support during DTCC testing.

The following graphic outlines the data flow to support trade reconciliation processes during DTCC testing.



The following are the New York Link ITRS/LTRS reports that will be included in DTCC testing.

Report ID	Report Name
XXXA0000267D	CDS TRADING BLOTTER - DROPPED TRADE REPORT
XXXA0000933D	CDS TRADING BLOTTER - UNMATCHED TRADE REPORT
XXXA0001890D	LOCKED-IN TRADE EXCEPTION REPORT

XXXA = CUID  
 XXXLL = Ledger

## **8 Exchanges/Alternative trading systems (ATS)**

Exchanges or alternative trading systems providers should contact CDS if they would like to provide their trade file to CDS.

## **9 CDCC**

CDCC will follow CDS's test schedule plan, and will provide a list of their test securities to accommodate specific testing needs at a later date.

CDCC will distribute a separate test plan at a later date.