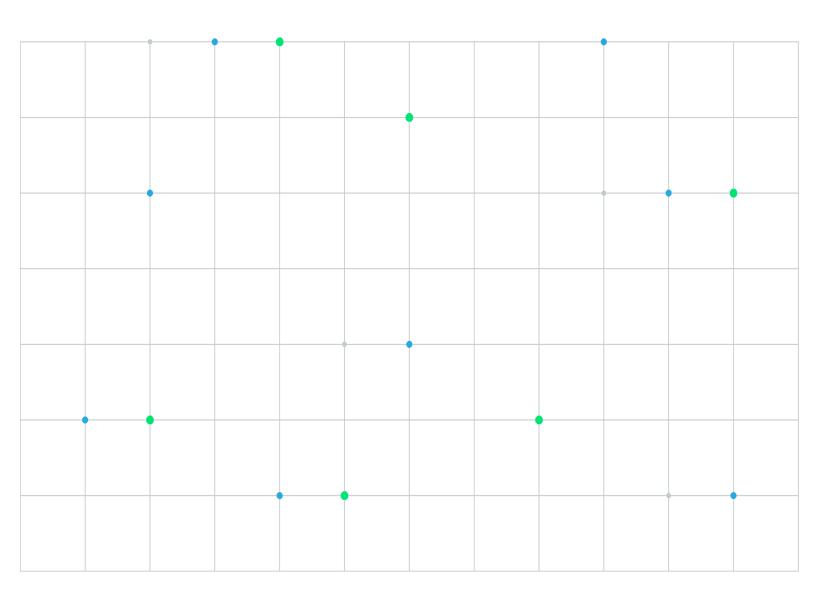


AutoCert+ Drop Copy 4.0 for EBS User Manual

7 October 2022



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Table of Contents

Getting Started	4
Additional Information	
Interview	
What's New	
Session Management Tests	
Logon Message	
Beginning of Week Logon	
Mid Week Logon	
Logon Process with Failover	
Sequencing Tests	13
Respond to Resend Request	14
Bi-Directional Resend Request Scenario	
Process Real-Time Messages During a Resend Response	17
Mid-Week Key Rotation	
Encapsulated Message Tests	
Received Encapsulated Message from eFix Transaction	21
Receive and Process Encapsulated Message (CGW)	21
Example of Encapsulated Message: (Multiple Messages)	23
Receive and Process Encapsulated Message (MSGW)	
Example of Encapsulated Message: (Multiple Messages)	25

Getting Started

The AutoCert+ tool is an automated testing tool for validating application functionality. It provides an easy-to-use web interface for walking through CME Group certification scenarios.

To facilitate the process of connecting a customer application to CME Globex, CME Group provides a dedicated certification environment to allow customers to test their systems before they complete certification.

The Drop Copy 4.0 service allows customers to receive real-time copies of CME Globex Execution Report and Acknowledgment messages as they are sent over iLink order entry system sessions. Drop Copy aggregates iLink messages, enabling customers to aggregate positions and monitor orders for sessions guaranteed by one or more clearing firms upon approval of the clearing firms.

Customers must manage sequence streams from Market Segment Gateway (MSGW) iLink source sessions per unique market segment; with the possibility of having the same sequence numbers from multiple market segments.



Note: This test suite uses "Dummy Contracts" or "Certification Dedicated Instruments" during the certification process.



To run and navigate AutoCert+:

- 1. Complete the steps detailed in the Process Summary EBS New Release Testing Setup Client Systems Wiki topic.
- 2. Log into the automated certification tool.
- 3. Review general AutoCert+ test suite navigation and general interview information.
- 4. Complete the Interview for this test suite.
- 5. Complete applicable test cases.
- 6. Complete the certification process from the Post Certification tab.

Additional Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library

Interview

The interview consists of a series of questions about your trading application. Based on your responses, certain tests are required and others are optional. You must complete the pre-certification interview before running the test cases.

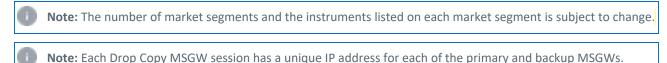


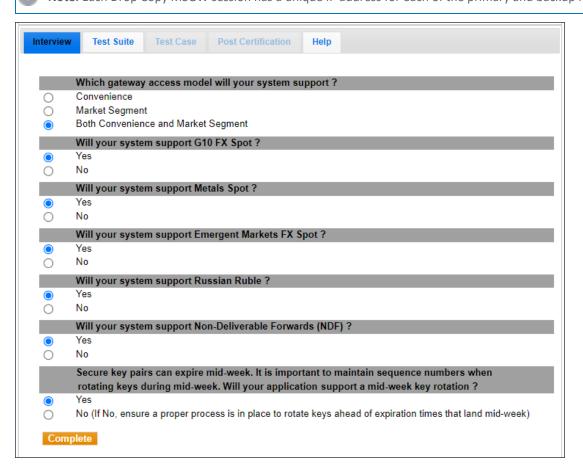
To complete the interview:

1. Select a **SenderComp** from the drop-down and select **ASSIGN**.



2. Answer each question and select "Complete" when finished.





What's New

The list below illustrates the updates made to the AutoCert+ Drop Copy 4.0 for EBS Help system.

Date	Торіс	Description
October 7, 2022	Format	Website and PDF format changes only.
September 22, 2022	All	Updated "Additional Drop Copy Information" links in all topics.
September 12, 2022	Interview	Updated interview question responses for "Will your system support Non- Deliverable Forwards (NDF)?"
March 9, 2022	Logon Process with Failover	Updated screenshot and step 1.
October 12, 2021	All	Updated iLink 2 message specification links.
March 31, 2021		Initial publication.

Session Management Tests

This section contains information about the Session Management tests.

Logon Message

This test verifies that your system can appropriately handle timely connection at <u>logon</u>, implement a valid logon <u>heartbeat</u> interval and then handle point of origin values on any Logon and ensuing acknowledgment message.

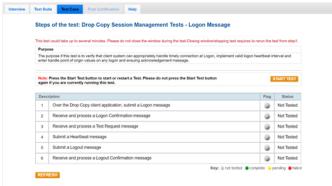
Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. Select the **START TEST** button.



Note: DO NOT select the START TEST button once the test is in progress.



To run a Logon Message test:

- 1. Over a Drop Copy connection, submit a Logon (35=A) message.
- 2. Receive and process a Logon (35=A) confirmation message.
- 3. Receive and process a Test Request (35=1) message.
- 4. Submit a Heartbeat (35=0) message.
- 5. Submit a Logout (35=5) message.
- 6. Receive and process a Logout (35=5) message.

Beginning of Week Logon

The Beginning of Week Logon test verifies that the client system can log on to the CME Group system at the beginning of the week and maintain the correct inbound and outbound sequence numbers (tag 34-MsgSeqNum).

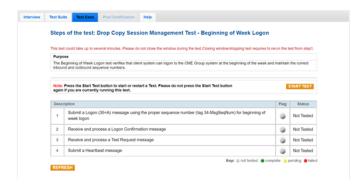
Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. Select the **START TEST** button.



Note: DO NOT select the START TEST button once the test is in progress.



To run the Beginning of Week Logon test:

- 1. Submit a Logon (35=A) message using the proper sequence number (tag 34-MsgSeqNum) for beginning of week logon.
- 2. Receive and process a Logon (35=A) confirmation message.
- 3. Receive and process a Test Request (35=1) message.
- 4. Submit a Heartbeat (35=0) message.

Mid Week Logon

This test verifies that the client system can <u>connect</u> to the CME Group system during the week and maintain the correct inbound and outbound sequence numbers (tag 34-MsgSeqNum).

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. Select the START TEST button.



To run the Mid Week Logon test:

- 1. Over a Drop Copy connection, submit a Logon (35=A) message.
- 2. Receive and process a Logout (35=5) message, including tag 789-NextMsgSeqNum.
- 3. Submit a Logon (35=A) message using the correct sequence number (tag 34-MsgSeqNum).
- 4. Receive and process a Logon (35=A) confirmation message.
- 5. Receive and process a Test Request (35=1) message.
- 6. Submit a Heartbeat (35=0) message.

Logon Process with Failover

The purpose of this test is to verify that client system can support primary gateway enforcement. In the event of a Drop Copy 4.0 failover, upon logon to the new primary connection, client systems will experience a significant increase (currently set to 4000) in sequence numbers (tag 34-MsgSeqNum) sent from CME Globex to the Client System. CME Group recommends that client systems request all missing messages.

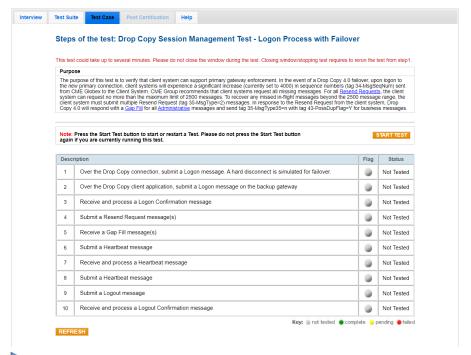
For all <u>Resend Requests</u>, the client system can request no more than the maximum limit of 2500 messages. To recover any missed in-flight messages beyond the 2500 message range, the client system must submit multiple Resend Request (tag 35-MsgType=2) messages.

In response to the Resend Request from the client system, Drop Copy 4.0 will respond with a <u>Gap Fill</u> for all <u>Administrative</u> messages and send tag 35-MsgType35=n with tag 43-PossDupFlag=Y for business messages.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.



To run a Logon Process with Failover test:

- 1. Over the Drop Copy connection, submit a Logon (35=A) message. A hard disconnect is simulated for failover.
- 2. Over the Drop Copy client application, submit a Logon (35=A) message on the backup gateway.
- 3. Receive and process a Logon (35=A) confirmation message.
- 4. Submit a Resend Request (35=2) message(s).
- 5. Receive a Gap Fill (35=4,123-GapFillFlag=Y) message(s).
- 6. Submit a Heartbeat (35=0) message.
- 7. Receive and process a Heartbeat message.
- 8. Submit a Heartbeat message.
- 9. Submit a Logout (35=5) message.
- 10. Receive and process a Logout (35=5) confirmation message.

Sequencing Tests

This section contains information about the Sequencing tests.

Respond to Resend Request

This test verifies that your system can respond to a Resend Request by gap fill.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.



To run the Respond to Resend Request test:

- 1. Over a Drop Copy connection, submit a Heartbeat (35=0) message.
- 2. Receive and process a Resend Request (35=2) message.
- 3. Submit a Sequence Reset Gap Fill (35=2, 123-GapFillFlag=Y) message.
- 4. Submit a Heartbeat (35=0) message.
- 5. Receive and process a Heartbeat (35=0) message.
- 6. Submit a Heartbeat (35=0) message.

Bi-Directional Resend Request Scenario

This test verifies that your system can receive out-of-sequence messages across multiple session connections during a Resend Response without triggering another Resend Request.

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

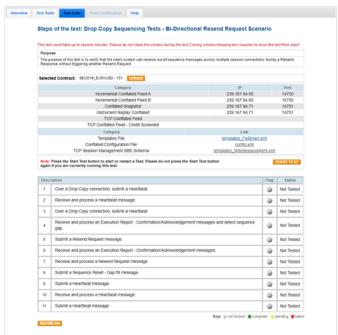


Note: DO NOT select the START TEST button once the test is in progress.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- · iLink FIX Tag Library





To run the Bi-Directional Resend Request Scenario test:

- 1. Over a Drop Copy connection, submit a Heartbeat (35=0) message.
- 2. Receive and process a Heartbeat (35=0) message.
- 3. Over an iLink connection, submit a Heartbeat (35=0) message.
- 4. Receive and process an Execution Report Order Creation [35=8, 39-OrdStatus=0 (New Order Ack)] message and detect a sequence gap.
- 5. Submit a Resend Request (35=2) message.

- 6. Receive and process an Execution Report Order Creation [35=8, 39-OrdStatus=0 (New Order Ack)] message.
- 7. Receive and process a Resend Request (35=2) message.
- 8. Submit a Sequence Reset Gap Fill (35=4, 123-GapFillFlag=Y) message.
- 9. Submit a Heartbeat (35=0) message.
- 10. Receive and process a Heartbeat (35=0) message.
- 11. Submit a Heartbeat (35=0) message.

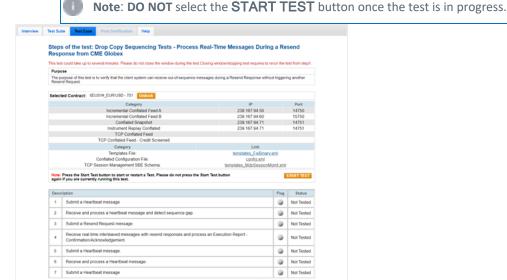
Process Real-Time Messages During a Resend Response

This test verifies that your system can receive out-of-sequence messages during a Resend Response without triggering another Resend Request.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



To run the Process Real-Time Messages During a Resend Response test:

- 1. Submit a Heartbeat (35=0) message.
- 2. Receive and process a Heartbeat (35=0) message and detect a sequence gap.
- 3. Submit a Resend Request (35=2) message.
- 4. Receive real-time interleaved messages with resend responses and process an <u>Execution Report Order Creation</u> [35=8, 39-OrdStatus=0 (New Order Ack)] message.
- 5. Submit a Heartbeat (35=0) message.
- 6. Receive and process a Heartbeat (35=0) message.
- 7. Submit a Heartbeat (35=0) message.

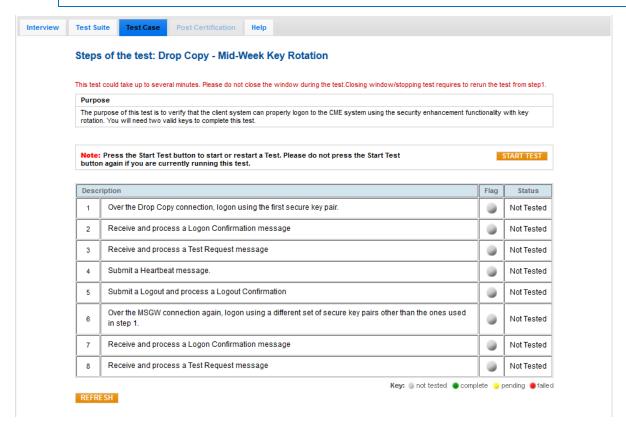
Mid-Week Key Rotation

This test verifies that the client system can properly logon to the CME system using the security enhancement functionality with key rotation. You will need two valid keys to complete this test.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.



To complete the Mid-Week Key Rotation test:

- 1. Over the Drop Copy connection, submit a Logon (35=A) message using the first secure key pair.
- 2. Receive and process a Logon (35=A) confirmation message.
- 3. Receive and process a Test Request (35=1) message.

- 4. Submit a Heartbeat (35=0) message.
- 5. Submit a Logout (35=5) and process a Logout (35=5) confirmation.
- 6. Over the MSGW connection again, submit a Logon (35=A) message using a different set of secure key pairs other than the ones used in step 3.
- 7. Receive and process a Logon Confirmation (35=A) message.
- 8. Receive and process a Test Request (35=1) message.

Encapsulated Message Tests

This section contains information about the encapsulated message tests.

Received Encapsulated Message from eFix Transaction

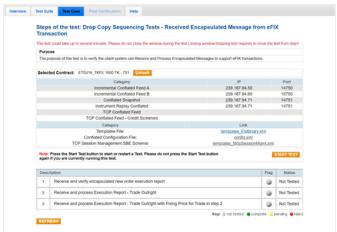
The purpose of this test is to verify the client system can receive and process encapsulated messages to support eFix transactions.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.
 - 0

Note: DO NOT select the START TEST button once the test is in progress.



To run the Received Encapsulated Message from eFix Transaction test:

- 1. Enter the tag 44-Price value to confirm that your system received an encapsulated Execution Report New Order message.
- 2. Receive and process the Execution Report Trade Outright message.
- 3. Receive and process the Execution Report Trade Outright message with the Fixing Price for the trade in step 2.

Receive and Process Encapsulated Message (CGW)

The purpose of this test is to verify the client system can receive and process encapsulated messages with new EBS tags provided in the Drop Copy payload with CGW session.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

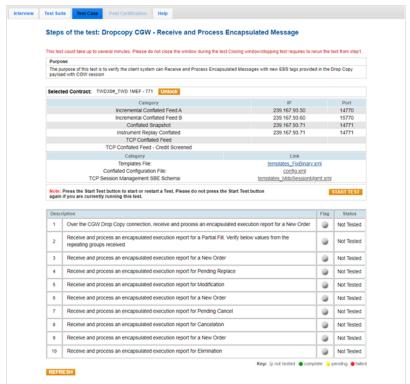


Note: DO NOT select the START TEST button once the test is in progress.

Additional Drop Copy Information

See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library





To run the Receive and Process Encapsulated Message (CGW) test:

- Enter the following tag values to confirm that your system received and processed an encapsulated <u>Execution Report</u>
 New Order message:
 - tag 57-TargetSubID
 - tag 34-MsgSeqNum
 - tag 37-OrderID
 - tag 1-Account
- 2. Enter the following repeating group tag values to confirm that your system received and processed an encapsulated message for a partial fill.
 - tag 1797-OrderEventExecID
 - tag 1799-OrderEventPx

- tag 1800-OrderEventQty
- tag 1802-OrderEventText
- 3. Select **Yes** or **No** to indicate whether your system successfully processed an encapsulated Execution Report New Order.
- 4. Enter the tag 39-OrdStatus value to indicate that your system received and processed the encapsulated execution report for Execution Report Pending Replace message.
- 5. Enter the tag 44-Price value to indicate that your system received and processed the Receive and process an encapsulated Execution Report Modify message.
- 6. Select **Yes** or **No** to indicate whether your system successfully processed an encapsulated <u>Execution Report New</u> Order message.
- 7. Enter the tag 39-OrdStatus value to indicate that your system received and processed an encapsulated <u>Execution</u> Report Pending Cancel message.
- 8. Enter the tag 39-OrdStatus value to indicate that your system received and processed an encapsulated <u>Execution</u> Report Cancel message.
- 9. Select **Yes** or **No** to indicate whether your system successfully processed an encapsulated Execution Report New Order message.
- 10. Enter the tag 39-OrdStatus value to indicate that your system received and processed the encapsulated <u>Execution</u> Report Elimination message.

Example of Encapsulated Message: (Multiple Messages)

The FIX payload is shown in **bold** below.

```
[8=FIX.4.2|9=509|35=n|34=185|369=57|52=20200610-05:47:01.098|49=CME|50=98|56=717NEXN|57=CSET|143=SG|212=413|213=<RTRF>
8=FIX.4.2|9=377|35=8|34=208|369=106|52=20200610-05:47:01.096|49=CME|50=98|56=EIVACPUSP|57=GUSUS|143=US,IL|1=ACP_ORDER|6=0|11=ACP1591768021071|14=0|17=9848:28271|20=0
37=982167244|38=67|39=0|40=2|41=0|44=130|48=3273848|54=2|55=#USBD|59=0|60=20200610-05:47:01.071|107=UB07#_1/2_
05/27|150=0|151=67|167=TNOTE|432=20200610|819=0|1028=Y|1031=H|1598=1|5149=Memo ACPOS|5906=A|5979=1591768021071320596|10=249|</RTRF>|10=027|]
```

Receive and Process Encapsulated Message (MSGW)

The purpose of this test is to verify the client system can receive and process encapsulated messages with new EBS tags provided in the Drop Copy payload with MSGW session.

Additional Drop Copy Information

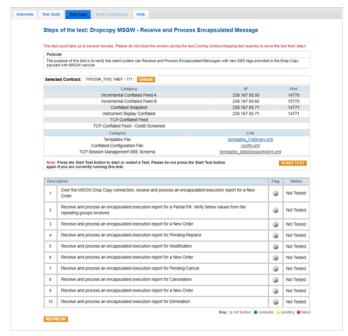
See the following documentation for more information on Drop Copy functionality:

- Drop Copy Service for iLink EBS Market
- iLink 3 Binary Order Entry EBS Market on CME Globex
- iLink FIX Tag Library

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



Note: DO NOT select the START TEST button once the test is in progress.





To run the Receive and Process Encapsulated Message (MSGW) test:

- Enter the following tag values to confirm that your system received and processed an encapsulated <u>Execution Report</u>
 New Order message:
 - tag 57-TargetSubID
 - tag 34-MsgSeqNum
 - tag 37-OrderID
 - tag 1-Account
- 2. Enter the following repeating group tag values to confirm that your system received and processed an encapsulated message for a partial fill.
 - tag 1797-OrderEventExecID
 - tag 1799-OrderEventPx
 - tag 1800-OrderEventQty
 - tag 1802-OrderEventText
- 3. Select **Yes** or **No** to indicate whether your system successfully processed an encapsulated Execution Report New Order.
- 4. Enter the tag 39-OrdStatus value to indicate that your system received and processed the encapsulated execution report for Execution Report Pending Replace message.
- 5. Enter the tag 44-Price value to indicate that your system received and processed the Receive and process an encapsulated Execution Report Modify message.

- 6. Select **Yes** or **No** to indicate whether your system successfully processed an encapsulated <u>Execution Report New</u> Order message.
- 7. Enter the tag 39-OrdStatus value to indicate that your system received and processed an encapsulated <u>Execution</u> Report Pending Cancel message.
- 8. Enter the tag 39-OrdStatus value to indicate that your system received and processed an encapsulated <u>Execution</u> Report Cancel message.
- 9. Select **Yes** or **No** to indicate whether your system successfully processed an encapsulated Execution Report New Order message.
- 10. Enter the tag 39-OrdStatus value to indicate that your system received and processed the encapsulated <u>Execution</u> Report Elimination message.

Example of Encapsulated Message: (Multiple Messages)

The FIX payload is shown in **bold** below.

[8=FIX.4.2|9=509|35=n|34=185|369=57|52=20200610-05:47:01.098|49=CME|50=98|56=717NEXN|57=CSET|143=SG|212=413|213=<RTRF>
8=FIX.4.2|9=377|35=8|34=208|369=106|52=20200610-05:47:01.096|49=CME|50=98|56=EIVACPUSP|57=GUSUS|143=US,IL|1=ACP_ORDER|6=0|11=ACP1591768021071|14=0|17=9848:28271|20=0
37=982167244|38=67|39=0|40=2|41=0|44=130|48=3273848|54=2|55=#USBD|59=0|60=20200610-05:47:01.071|107=UB07#_1/2_
05/27|150=0|151=67|167=TNOTE|432=20200610|819=0|1028=Y|1031=H|1598=1|5149=Memo ACPOS|5906=A|5979=1591768021071320596|10=249|</RTRF>|10=027|