AO 91 (Rev. 11/11) Criminal Complaint

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FILED
JAN 11 2018
THOMAS G. BRUTON
CLERK, U.S. DISTRICT COURT

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

UNITED STATES OF AMERICA

v.

JIONGSHENG ("JIM") ZHAO

CASE NUMBER:
**UNDER SEAL**
18CR 024

MAGISTRATE JUDGE COLE

**CRIMINAL COMPLAINT**

I, the complainant in this case, state that the following is true to the best of my knowledge and belief.

From in or about July 2012 through in or about March 2016, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, the defendant violated:

| *Code Section* | *Offense Description* |
|---|---|
| Title 18, United States Code, Section 1343 | Defendant knowingly, and with the intent to defraud, devised and intending to devise, and willfully participated in, a scheme and artifice to defraud, and for obtaining money and property by means of materially false and fraudulent pretenses, representations, and promises, knowingly transmitted and caused to be transmitted by means of wire communication in interstate and foreign commerce, writings, signs, signals, pictures, and sounds for the purpose of executing the scheme and artifice. |
| Title 18, United States Code, Section 1348 | Defendant knowingly, and with the intent to defraud, executed, and attempted to execute, and willfully participated in, a material scheme and artifice to defraud a person in connection with a commodity for future delivery. |

On or about April 4, 2013; July 15, 2013; July 29, 2013; December 7, 2015; December 22, 2015; and March 17, 2016, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, the defendant violated:

| *Code Section* | *Offense Description* |
|---|---|
| Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2) | Defendant knowingly engaged in trading, practice, and conduct on or subject to the rules of a registered entity – the Chicago Mercantile Exchange – that was "spoofing," that is, bidding and offering with the intent, at the time the bid or offer was entered, to cancel the bid or offer before execution. |

On or about June 22, 2017, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, the defendant violated:

| *Code Section* | *Offense Description* |
|---|---|
| Title 7, United States Code, Section 13(a)(4) | Defendant willfully made materially false, fictitious, and fraudulent statements and representations to a registered entity – the Chicago Mercantile Exchange – acting in furtherance of its official duties. |

This criminal complaint is based upon these facts:

X Continued on the attached sheet.

A. WESLEY NEVENS
Special Agent
Federal Bureau of Investigation

Sworn to before me and signed in my presence.

Date: Jan 11, 2018

*Judge's signature*

City and state: Chicago, Illinois

HON. JEFFREY COLE, U.S. MAGISTRATE JUDGE
*Printed name and Title*

## AFFIDAVIT IN SUPPORT OF CRIMINAL COMPLAINT

I, A. Wesley Nevens, being duly sworn, state as follows:

1. I am a Special Agent with the Federal Bureau of Investigation ("FBI"), assigned to the Chicago Field Division. I have been employed by the FBI as a Special Agent since 2010. During my tenure with the FBI, I have received training in the investigation of financial crimes and in financial analysis. As part of my duties as a Special Agent, I have investigated criminal violations relating to complex corporate fraud. During my career, I have been the affiant on applications for search warrants and arrest warrants in federal criminal investigations.

2. I submit this Affidavit in support of a criminal complaint and arrest warrant for JIONGSHENG ("JIM") ZHAO (hereinafter "ZHAO") for: (i) wire fraud, in violation of Title 18, United States Code, Section 1343; (ii) commodities fraud, in violation of Title 18, United States Code, Section 1348(1); (iii) spoofing, in violation of Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2); and (iv) false statements, in violation of Title 7, United States Code, Section 13(a)(4).

3. For the reasons set forth below, there is probable cause to believe that:

a. Beginning in or about approximately July 2012 and continuing until in or about approximately March 2016, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, ZHAO, having knowingly, and with the intent to defraud, devised and intending to devise, and willfully participated in, a scheme and artifice to defraud participants in the market for E-Mini S&P 500 futures contracts ("E-Mini") on the Chicago Mercantile

Exchange ("CME") and for obtaining money and property by means of materially false and fraudulent pretenses, representations, and promises, knowingly transmitted and caused to be transmitted by means of wire communication in interstate and foreign commerce, writings, signs, signals, pictures, and sounds for the purpose of executing the scheme and artifice, in violation of Title 18, United States Code, Section 1343;

b. Beginning in or about approximately July 2012 and continuing until in or about approximately March 2016, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, ZHAO knowingly, and with the intent to defraud, executed, and attempted to execute, and willfully participated in, a material scheme and artifice to defraud market participants in connection with commodities for future delivery, that is, E-Mini futures contracts, in violation of Title 18, United States Code, Section 1348(1);

c. On or about April 4, 2013; July 15, 2013; July 29, 2013; December 7, 2015; December 22, 2015; and March 17, 2016, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, ZHAO knowingly engaged in trading, practice, and conduct on or subject to the rules of a registered entity, namely the CME, that was "spoofing," that is, bidding and offering with the intent, at the time the bid or offer was entered, to cancel the bid or offer before execution, in violation of Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2); and

d. On or about June 22, 2017, in Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, ZHAO willfully made materially false, fictitious, and fraudulent statements and representations to a registered entity, namely the CME, acting in furtherance of its official duties, in violation of Title 7, United States Code, Section 13(a)(4).

4. The information in this Affidavit is based upon (i) my personal participation in this investigation, (ii) my training and experience, (iii) my review of documents and records obtained during the investigation, (iv) my discussions with a professor and academic researcher who studies and has written extensively on financial markets and algorithmic trading, and (v) analysis of trading data presently available and related information obtained by the FBI in connection with the investigation.

5. This Affidavit is being executed as part of an ongoing investigation and is based on my current understanding of the relevant facts based on the above. As the investigation proceeds, new facts may come to light that qualify or contradict prior facts. Because this Affidavit is being submitted for the limited purpose of establishing probable cause for the criminal complaint and arrest warrant, I have not included each and every fact known concerning this investigation. I have set forth only the facts that I believe are necessary to establish that there is probable cause to believe that ZHAO has violated (i) Title 18, United States Code, Section 1343; (ii) Title 18, United States Code, Section 1348(1); (iii) Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2); and (iv) Title 7, United States Code, Section 13(a)(4).

## BACKGROUND

6. At all relevant times, ZHAO was employed as a trader at Trading Firm A, which was a proprietary trading firm located in Sydney, Australia.[1]

7. The CME Group Inc. ("CME Group") was a commodities marketplace made up of several exchanges, including the CME, which was based in Chicago, Illinois. At all relevant times, the CME was a registered entity, operating as a Designated Contract Market. The CME utilized an electronic trading system called "Globex."

8. Globex was a global electronic trading platform operated by the CME Group, which utilized computer servers located in Chicago and Aurora, Illinois. Trading on Globex was conducted electronically using a visible "order book" that displayed quantities of anonymous orders (*i.e.*, offers to sell futures contracts and bids to buy futures contracts) at various price points, or "levels." Globex allowed market participants to trade futures contracts either at the exchange itself or from a location virtually anywhere in the world. Through Globex, markets operated by the CME Group offered trading opportunities in various futures contracts, including for E-Mini.

9. The CME, through the Globex system, allowed traders to place orders in the form of "bids" to buy or "offers" to sell a futures contract. The minimum price increment at which a futures contract could trade on the CME was called a "tick," and the value of a tick for each contract was set by the CME. At any given time, the

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1 The identity of Trading Firm A is known to Your Affiant.

market for a given futures contract comprised the prevailing best (*i.e.*, highest) bid and prevailing best (*i.e.*, lowest) offer. The difference between the best bid and the best offer was the "spread." An order was "filled" or "executed" when a buyer and seller bought and sold a particular contract, with either the buyer "crossing the spread" to buy at the prevailing best offer, or the seller crossing the spread to sell at the prevailing best bid.

10. A futures contract was a standardized, legally binding agreement that, once executed, obligated the parties to the contract to buy or to sell a specific product or financial instrument in the future. That is, the buyer and seller of a futures contract agreed on a price today for a product or financial instrument to be delivered (by the seller), in exchange for money (to be provided by the buyer), on a future date. Futures contracts traded on set, periodic expiration cycles (*i.e.*, monthly or quarterly).

11. Futures contracts were traded on markets designated and regulated by the Commodity Futures Trading Commission (the "CFTC"), the federal agency established by federal statute to regulate, among many other things, transactions related to and involving the purchase and sale of futures contracts.

12. E-Mini was a stock market index futures contract that represented an agreement to buy or sell the future cash value of the Standard & Poor's 500 Index, which was an index of 500 U.S. stocks, at a specified date. The E-Mini futures contracts were traded on the CME through Globex.

13. Based on my training, my personal participation in this investigation, and my experience investigating previous spoofing cases, I have learned that:

a. "Spoofing" was the unlawful practice of bidding or offering with the intent, at the time the bid or offer is placed, to cancel the bid or offer before it is executed. Spoofing can be used as a method to engage in market manipulation.

b. One of the many ways that spoofing can be used to manipulate the market for futures contracts is:

i. A trader places on one side of the market one or more genuine orders either to buy or to sell futures contracts that the trader intends to execute (the "Primary Orders").

ii. At or near the same time that the Primary Orders are placed, the same trader also places one or more orders, of a much greater visible quantity, either to buy or to sell futures contracts on the opposite side of the market, which orders the trader, by contrast, intends, at the time the orders are placed, to cancel before they are executed (the "Spoof Orders"). To drive prices up, the trader places Spoof Orders to buy, which create the false impression in the market of increased demand. To drive prices down, the trader places Spoof Orders to sell, which create the false impression in the market of increased supply.

iii. By placing the Spoof Orders, the trader intends to create a market imbalance, injecting false and misleading information (*i.e.*, orders the trader does not intend to execute) into the market to create the false impression of increased supply or demand.

iv. This false and misleading information may, and often does, cause other market participants to buy and to sell futures contracts at quantities, at prices (including by crossing the spread), and at times, that they otherwise would not because, among other things, market participants react to the apparent (although artificial) increase in supply or demand that might, and often does, affect futures contract prices.

v. When the trader who enters Spoof Orders induces enough market participants to buy or to sell futures contracts at a quantity, price, or time that they otherwise would not have traded, the price of a given futures contract may change, resulting in the creation of a new, but artificially inflated or deflated, price. When the new artificial price has changed enough, the trader's Primary Orders trade at quantities, at prices, and at times that otherwise would not have been available, but for the Spoof Orders.

## SUMMARY OF THE INVESTIGATION

### Overview of ZHAO's Scheme to Defraud and Spoofing Practice

14. The FBI has been investigating the existence of materially deceptive trading activity in the markets for E-Mini futures contracts by, among others, ZHAO.

15. Based on information uncovered by the FBI during the investigation, which is discussed in more detail below, on certain days beginning in or around July 2012 and continuing until in or around March 2016 (the "Relevant Period"), in

Chicago, in the Northern District of Illinois, Eastern Division, and elsewhere, ZHAO (i) devised, executed, and participated in a scheme to defraud other market participants, and (ii) engaged in the practice of spoofing in connection with E-Mini futures contracts that were financial products traded on the CME.

16. Specifically, ZHAO placed one or more large orders for E-Mini futures contracts on one side of the market which, at the time ZHAO placed the orders, he intended to cancel before execution. The purpose of these Spoof Orders was to trick other market participants by injecting materially misleading information into the market that indicated increased supply or demand, but was not genuine because ZHAO never intended to execute the bids or offers contained in these Spoof Orders. This, in turn, often induced market participants to buy or to sell E-Mini futures contracts at quantities, at prices, and at times that they would not have otherwise. While the Spoof Orders were pending, and in those instances when the Spoof Orders caused or assisted in causing price movements, ZHAO often executed smaller Primary Orders on the opposite side of the market in an attempt to profit or otherwise benefit from the artificial movement in price that he had caused or assisted in causing.

Analysis of ZHAO's Large- and Small-Order E-Mini Trading Activity

17. Your Affiant has reviewed an analysis conducted during the FBI's investigation that examined ZHAO's trading activity in the E-Mini future contracts market for a period from approximately July 2012 to March 2016. Specifically, the analysis looked at instances of ZHAO's trading activity in which he placed larger- and

smaller-sized E-Mini orders on opposite sides of the market and whether those orders were executed or cancelled. Based on my training and experience investigating spoofing, I have learned that one indicia of potential spoofing activity can be instances when larger-sized orders, which have a short duration and low percentage execution, are placed on the opposite of the market from smaller-sized orders, which have a longer duration and a higher execution percentage.

18. Based on my review of that analysis, I have learned that it first examined the number of instances when ZHAO placed an order either at, or one level off of, the best bid or offer (the "Small-Side Order") and then placed another order on the opposite side of the market from the Small-Side Order that was either at, or one level off of, the best bid or offer and was at least five times the quantity of the Small-Side Order (the "Large-Side Order"). The analysis identified over 1,946 instances between July 2012 and March 2016, and in those instances, the Small-Side Orders were active in the market for an average duration of approximately 34.0 seconds and were filled approximately 95.1% of the time. During that same period, the Large-Side Orders were active in the market for an average duration of approximately 0.8 seconds and were filled approximately 0.14% of the time. In addition, when placed, the Large-Side Orders constituted on average 56% of the order book at the price level that they were placed and ZHAO's personal order book had an average imbalance of 54.7 times (*i.e.*, the Large-Side Order side was on average 54.7 times the size of the Small-Side Order side).

19. A second aspect of the analysis, which I have reviewed, applied the same Small-Side Order and Large-Side Order parameters set out in paragraph 18 above, but determined the number of instances when a Small-Side Order was partially or completely filled with the last lot being filled while the Large-Side Order was still active in the market. The analysis identified over 850 instances between July 2012 and March 2016, and in those instances, the Small-Side Orders were active in the market for an average duration of approximately 6.8 seconds and were filled approximately 98.1% of the time. During that same period, the Large-Side Orders were active in the market for an average duration of approximately 0.7 seconds and were filled approximately 0.27% of the time. In addition, when placed, the Large-Side Orders constituted on average 56% of the order book at the price level that they were placed and ZHAO's personal order book had an average imbalance of 48.8 times (*i.e.*, the Large-Side Order side was on average 48.8 times the size of the Small Order side). The Large-Side Orders also were cancelled on average approximately 0.714 seconds after the last lot of the Small-Side Order was filled.

<u>ZHAO's Execution of the Scheme to Defraud and Spoofing Practice</u>

20. Based on information uncovered by the FBI during the investigation, on certain days during the Relevant Period, ZHAO sought to enrich himself through a scheme to defraud and spoofing practice in connection with the purchase and sale of E-Mini futures contracts on the CME. By placing a large-volume order for E-Mini futures contracts at certain price levels with the intent, at the time the order was placed, to cancel the order before execution, ZHAO created the false appearance of

substantial supply or demand in order to fraudulently induce other market participants to react to his deceptive market information.

21. ZHAO implemented, at various times, the following pattern of order and trade activity in the E-Mini futures contract market during the Relevant Period, and there is probable cause to believe that the pattern articulated below is materially deceptive and constitutes spoofing:

a. First, ZHAO placed a small Primary Order to buy or to sell—averaging between one and two lots—on one side of the market close to the prevailing price at which that given E-Mini futures contract was trading;

b. Second, after an average of 10.623 seconds later, ZHAO placed a large order on the opposite side of the market from the Primary Order that was, on average, approximately 157 lots (the "Opposite Order") and close to the prevailing price at which that given E-Mini futures contract was trading;

c. Third, at least one lot of ZHAO's Primary Order was filled, on average 0.081 seconds after the placement of his Opposite Order; and

d. Fourth, after filling at least one lot of his Primary Order, ZHAO would quickly cancel his Opposite Order—on average, 0.676 seconds after the last fill of the Primary Order—before the Opposite Order could be executed.

***[Exs. 1 & 2 (2017.12.18 JIMZHAO - Emini - Updated with ARMADA)]***

22. ZHAO employed the pattern of trading activity summarized above in paragraph 21 in the E-Mini futures contracts market over six hundred times during the Relevant Period. Based on my review of an analysis of ZHAO's E-Mini trading

activity during the Relevant Period, I have learned that ZHAO engaged in the trading activity summarized in paragraph 21 above between the hours of 5 p.m. and 9 a.m. Central Time. Based on my training and experience, I know that this is a time period during which the liquidity in the E-Mini futures contracts market typically is lower and that larger orders—such as ZHAO's Opposite Orders—generally are more likely to affect prices in the E-Mini futures market during periods of lower liquidity.

23. Based on my training and experience and work on this investigation, I have learned that the Spoof Order messages were wire communications that traveled in foreign and interstate commerce because ZHAO placed the Spoof Orders from locations outside the United States, including from the Commonwealth of Australia, and such wires traveled into the United States, specifically into the Northern District of Illinois.

ZHAO's E-Mini Trading Activity Was Consistent with Spoofing

24. I have spoken with an expert who reviewed an analysis of ZHAO's E-Mini trading activity during the Relevant Period.[2] Based on that review, the expert concluded that the pattern of ZHAO's trading activity during the Relevant Period that is summarized above in paragraph 21 was consistent with a practice of spoofing.

25. The expert explained that, of the variety of ways to engage in spoofing, one way is for a trader to place large orders on one side of the market, without the intent to execute them, in order to facilitate the execution of small orders placed on

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2 The identity of the expert is a known to Your Affiant. The expert is a professor and academic researcher who studies and has written extensively on financial markets and algorithmic trading.

the opposite side of the market. The expert stated that ZHAO's trading activity was consistent with spoofing because ZHAO's trading activity had the characteristics of large orders (*i.e.*, the Opposite Orders) that were not executed and that facilitated the execution of the small orders (*i.e.*, the Primary Orders) on the opposite side of the market.

26. The expert also stated that, when a trader is engaged in spoofing, once a large order had served its purpose—the execution of the small order on the opposite side—the trader no longer wanted the large order to be active in the market and would cancel it. The expert noted that ZHAO's Opposite Orders were cancelled on average within 0.676 seconds after the last lot of a Primary Order was filled and that ZHAO's Opposite Orders had an average fill ratio of 0.03% (*i.e.*, on average, virtually all of the Opposite Orders were cancelled before they could be filled).

27. The expert also stated that by placing large Opposite Orders, ZHAO injected false supply and demand information into the market that would facilitate execution of ZHAO's Primary Orders. The expert noted that ZHAO's Opposite Orders were on average 61.5% of the order book at the price level that they were placed—that is, on average, ZHAO's Opposite Orders were more than half of the visible order book at a given price. The expert explained that market participants take the visible order book into account when deciding whether to trade E-Mini futures contracts. The expert explained that ZHAO's trading activity injected false information into the market when, for example, ZHAO's Opposite Orders on the bid side created artificial demand in order for ZHAO to execute his Primary Orders at a higher price on the

opposite side of the market. The expert noted that ZHAO's Primary Orders were filled quickly, within approximately 0.081 seconds following the placement of an Opposite Order, which the expert explained was consistent with the Opposite Orders inducing other market participants to trade with ZHAO's Primary Orders.

<u>April 4, 2013 Example of ZHAO's Spoofing Practice</u>

28. As one example of ZHAO's pattern of trading activity that is summarized above in paragraph 21, ZHAO engaged in the following order and trade activity in the E-Mini futures contract market:

a. On April 4, 2013, at 23:23:18.875[3], ZHAO placed a Primary Order to buy one E-Mini futures contract at the price of $1,550.75, which was at the best prevailing bid price at that point in time.

b. Second, approximately three seconds later, at 23:23:21.532, ZHAO placed an Opposite Order to sell 151 E-Mini futures contracts at the price of $1,551.00, which was at the best prevailing offer price at that point in time and constituted approximately 41% of the order book to sell E-Minis at that price level.

c. Third, approximately two milliseconds after placing the Opposite Order, ZHAO's one-lot Primary Order to buy was filled at 23:23:21.534.

d. Fourth, less than one second after that fill, at 23:23:22.313, ZHAO cancelled his Opposite Order of 151 lots to sell without any of the Opposite

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3 All times in this Affidavit are in Central Time.

Order being filled. The 151-lot Opposite Order to sell had been active in the market for approximately 781 milliseconds before ZHAO cancelled it.

29. Approximately fourteen minutes after the conduct summarized above in paragraph 28 occurred, ZHAO engaged in the following order and trade activity:

a. At 23:37:04.032, ZHAO placed a second Primary Order, this time to sell one E-Mini futures contract at the price of $1,551.00, which was at the best prevailing offer price at that point in time.

b. Second, approximately six seconds later, at 23:37:10.360, ZHAO placed an Opposite Order to buy 171 E-Mini futures contracts at the price of $1,550.75, which was at the best prevailing bid price at that point in time and constituted 69% of the order book to buy E-Minis at that price level.

c. Third, approximately four milliseconds after placing the Opposite Order, ZHAO's one-lot Primary Order to sell was filled at 23:37:10.364.

d. Fourth, less than one second after that fill, at 23:37:11.146, ZHAO cancelled his Opposite Order of 171-lots to buy without any of the Opposite Order being filled. The 171-lot Opposite Order to buy had been active in the market for approximately 786 milliseconds before ZHAO cancelled it.

July 15, 2013 Example of ZHAO's Spoofing Practice

30. As a second example, ZHAO engaged in the following order and trade activity in the E-Mini futures contract market:

a. On July 15, 2013, at 3:15:06.510, ZHAO placed a Primary Order to sell one E-Mini futures contract at the price of $1,674.50, which was at the best prevailing offer price at that point in time.

b. Second, approximately 20 seconds later, at 3:15:26.790, ZHAO placed an Opposite Order to buy 151 E-Mini futures contracts at the price of $1,674.25, which was at the best prevailing bid price at that point in time and constituted approximately 65% of the order book to buy E-Minis at that price level.

c. Third, approximately five hundred milliseconds after placing the Opposite Order, ZHAO's one-lot Primary Order to sell was filled at 3:15:27.296.

d. Fourth, less than 300 hundred milliseconds after that fill, at 3:15:27.587, ZHAO cancelled his Opposite Order of 151-lots to buy without any of the Opposite Order being filled. The 151-lot Opposite Order to buy had been active in the market for approximately 797 milliseconds before ZHAO cancelled it.

31. Approximately one hour after the conduct summarized above in paragraph 30 occurred, ZHAO engaged in the following order and trade activity:

a. At 4:19:32.782, ZHAO placed a second Primary Order, this time to buy one E-Mini futures contract at the price of $1,673.75, which was at the best prevailing bid price at that point in time.

b. Second, less than three seconds later, at 4:19:35.266, ZHAO placed an Opposite Order to sell 151 E-Mini futures contracts at the price of $1,674.00, which was at the best prevailing offer price at that point in time and constituted 60% of the order book to sell E-Minis at that price level.

c. Third, approximately four milliseconds after placing the Opposite Order, ZHAO's one-lot Primary Order to buy was filled at 4:19:35.270.

d. Fourth, less than one second after that fill, at 4:19:36.159, ZHAO cancelled his Opposite Order of 151 lots to sell without any of the Opposite Order being filled. The 151-lot Opposite Order to sell had been active in the market for approximately 893 milliseconds before ZHAO cancelled it.

<u>July 29, 2013 Example of ZHAO's Spoofing Practice</u>

32. Finally, as a third example, ZHAO engaged in the following order and trade activity in the E-Mini futures contract market:

a. On July 29, 2013, at 20:33:55.456, ZHAO placed a Primary Order to sell one E-Mini futures contract at the price of $1,685.50, which was at the best prevailing offer price at that point in time.

b. Second, approximately four seconds later, at 20:33:59.830, ZHAO placed an Opposite Order to buy 201 E-Mini futures contracts at the price of $1,685.25, which was at the best prevailing bid price at that point in time and constituted approximately 69% of the order book to buy E-Minis at that price level.

c. Third, approximately one millisecond after placing the Opposite Order, ZHAO's one-lot Primary Order to sell was filled at 20:33:59.831.

d. Fourth, less than 700 hundred milliseconds after that fill, at 20:34:00.501, ZHAO cancelled his Opposite Order of 201-lots to buy without any of the Opposite Order being filled. The 201-lot Opposite Order to buy had been active in the market for approximately 671 milliseconds before ZHAO cancelled it.

33. Approximately twenty-six seconds after the conduct summarized above in paragraph 32 occurred, ZHAO engaged in the following order and trade activity:

a. At 20:34:26.704, ZHAO placed a second Primary Order, this time, to buy one E-Mini futures contract at the price of $1,685.25, which was at the best prevailing bid price at that point in time.

b. Second, less than three seconds later, at 20:34:29.003, ZHAO placed an Opposite Order to sell 201 E-Mini futures contracts at the price of $1,685.50, which was at the best prevailing offer price at that point in time and constituted 79% of the order book to sell E-Minis at that price level.

c. Third, approximately one millisecond after placing the Opposite Order, ZHAO's one-lot Primary Order to buy was filled at 20:34:29.004.

d. Fourth, less than 700 milliseconds after that fill, at 20:34:29.692, ZHAO cancelled his Opposite Order to sell 201 lots without any of the Opposite Order being filled. The 201-lot Opposite Order to sell had been active in the market for approximately 689 milliseconds before ZHAO cancelled it.

The CME's Investigation of ZHAO's E-Mini Trading Activity

34. Based on my review of documents from the CME, I learned that the CME Group began an investigation into ZHAO's E-Mini trading activity, and it issued requests for information regarding ZHAO to the futures commission merchant that cleared Trading Firm A's trades in March 2016 and May 2016. In July 2016, the CME Group contacted ZHAO and requested that he meet for an interview pursuant to CME rules.

35. On August 9, 2016, two investigators with the CME Group's Market Regulation Department interviewed ZHAO in connection with their investigation into ZHAO's E-Mini trading activity. During the interview, the investigators questioned ZHAO about his trading activity generally, and they discussed three exhibits with ZHAO that contained excerpts of his E-Mini trading activity from December 7, 2015, December 22, 2015, and March 17, 2016.

36. On February 2, 2017, the CME Group sent a Notice of Enforcement (the "Notice") to ZHAO stating that the Market Regulation Department had "completed its investigation into allegations that on numerous occasions between September 14,

2015 and March 23, 2016, [ZHAO] engaged in disruptive trading practices" in certain E-Mini futures contracts. The Notice also stated, among other things, that ZHAO "may attempt to settle this case prior to Market Regulation presenting the findings of this investigation to a panel of the Probable Cause Committee and seeking the issuance of charges" and that the CME Group "look[ed] forward to continuing our conversation regarding this matter."

37. On May 22, 2017, the CME Group provided ZHAO's counsel[4] with "a few charts of Zhao's trading, which are examples of the activity at issue." Specifically, the CME Group provided ZHAO with three charts containing examples of ZHAO's E-Mini trading activity from December 7, 2015, December 22, 2015, and March 17, 2016, which the CME Group had shown to ZHAO during his August 9 interview (the "CME Trading Examples").[5] The charts included information regarding, among other things, the time, side (buy or sell), and quantity for orders that ZHAO placed, cancelled, or executed over a certain period of time. The charts also included information regarding the best, and second-best, prevailing bid and offer prices at the time an order was placed, cancelled, or executed.

<u>June 22 Letter to CME Group and ZHAO's Enclosure</u>

38. On June 22, 2017, ZHAO's counsel sent a letter to the CME Group regarding its investigation concerning ZHAO's E-Mini trading activity (the "June 22

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4 The identity of ZHAO's counsel is known to Your Affiant.

5 Regarding the excerpt of ZHAO's trading activity on December 22, 2015, the chart provided to ZHAO's counsel on May 22 contained only one of the two examples of ZHAO's December 22, 2015 trading activity that the CME Group had discussed with ZHAO during the interview on August 9, 2016.

Letter"). Based on my review of the June 22 Letter, I have learned that it stated that counsel had "consulted with Jim Zhao and [Trading Firm A] regarding Staff's concerns about market disruption under CME Rule 575" and that " [w]e respectfully suggest that Jim's trading does not warrant any inference of alleged market disruption or any intent not to trade."[6]

39. The June 22 Letter noted that the CME Group had "sent us three examples of what you considered to be days where Jim's trading violated the Rule." The June 22 Letter stated that "we thought it might be helpful to examine those days a bit more thoroughly to determine what trading strategy was being deployed" and that the letter would "discuss the trades." The June 22 Letter included a separate discussion and explanation of ZHAO's trading strategy for each of the three examples.

40. Generally, the June 22 Letter stated that ZHAO was placing trades using two different strategies in each of the three examples: "scalping" and "spread trading." The June 22 Letter explained that a "scalping strategy" occurred when "orders are submitted and trades made in the shortest time frame possible to profit from small market discrepancies," and that a "spreading strategy" had "a different goal" and occurred when "orders are submitted and trades are made as one market is traded against another by submitting orders in opposite directions."

41. Enclosed with the June 22 Letter was a document that also discussed ZHAO's trading activity regarding the three examples (the "June 22 Enclosure"). The

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6 Unless a direct quotation, all statements in this Affidavit regarding the contents of the June 22 Letter are based on Your Affiant's review of that document and are made in sum and substance.

June 22 Letter identified ZHAO as the author of the June 22 Enclosure by describing it as, among other things, "Jim's recounting" of his trading activity and something that was "provided by Jim with his explanation."[7] As discussed in more detail in paragraphs 43, 45, and 47 below, in the June 22 Enclosure, ZHAO addressed the three examples of his E-Mini trading activity that the CME Group identified in the CME Trading Examples. For each example, ZHAO stated that his trading activity involved two strategies: (i) "scalping" or "Scalping/averaging"; and (ii) "spread trade" or "spread trades." ZHAO said his spread trading strategy involved buying or selling E-Mini futures contracts while selling or buying ASX SPI 200 Index ("SPI") futures contracts. Based on my training and experience, I know that the SPI is an equity index futures contract that is based on the S&P/ASX 200 Index, which is a market index of Australian stocks.

December 7, 2015 Example

42. Based on my review of the CME Trading Examples, the example of ZHAO's E-Mini trading activity from December 7, 2015 (the "December 7 Example") showed that ZHAO engaged in the following order and trade activity in the E-Mini futures contract market:

a. On December 7, 2015, at 3:15:52.896 and 3:15:55.923, ZHAO placed Primary Orders to buy three and six E-Mini futures contracts,

7 Unless a direct quotation, all statements in this Affidavit regarding the contents of the June 22 Enclosure are based on Your Affiant's review of that document and are made in sum and substance.

respectively, at the price of $2,094.00, which was at the best prevailing bid price at that point in time.

b. Second, approximately five and two seconds later, respectively, at 3:15:57.994, ZHAO placed an Opposite Order to sell 101 E-Mini futures contracts at the price of $2,094.25, which was at the best prevailing offer price at that point in time and constituted approximately 66% of the order book to sell E-Minis at that price level.

c. Third, approximately one and two milliseconds, respectively, after placing the 101-lot Opposite Order, ZHAO's three-lot Primary Order to buy was filled at 3:15:57.995 and ZHAO's six-lot Primary Order to buy was filled at 3:15:57.996.

d. Fourth, approximately 661 milliseconds after that second fill, at 3:15:58.657, ZHAO cancelled his Opposite Order of 101 lots to sell without any of the Opposite Order being filled. The 101-lot Opposite Order to sell had been active in the market for approximately 663 milliseconds before ZHAO cancelled it.

e. Approximately two seconds later on that same date, at 3:16:00.624, ZHAO placed another Primary Order to buy eleven E-Mini futures contracts at the price of $2,094.00, which was at the best prevailing bid price at that point in time.

f. Second, approximately three seconds later, at 3:16:03.202, ZHAO placed an Opposite Order to sell 151 E-Mini futures contracts at the price of

$2,094.25, which at the best prevailing offer price at that point in time and constituted approximately 79% of the order book to sell E-Minis at that price level.

g. Third, approximately one millisecond after placing the 151-lot Opposite Order, ZHAO's eleven-lot Primary Order to buy was filled at 3:16:03.203.

h. Fourth, approximately 674 milliseconds after that fill, at 3:16:03.877, ZHAO cancelled his Opposite Order of 151 lots to sell without any of the Opposite Order being filled. The 151-lot Opposite Order to sell had been active in the market for approximately 675 milliseconds before ZHAO cancelled it.

43. Based on my review of the June 22 Enclosure, I have learned that ZHAO stated, among other things, that his trading in the December 7 Example involved "Scalping" and "Spread trades." He said his trading activity under the "Scalping" strategy was "not related to" his "Spread trades." ZHAO stated that the 101-lot and 151-lot Opposite Orders (¶¶ 42(b) and 42(f) above) were part of his "SPI/Mini Spread" strategy and the three-, six-, and 11-lot Primary Orders (¶¶ 42(a) and 42(e) above) in the example were part of a "Scalping" strategy. ZHAO said that his spread trades "were placed in E-mini with the intention to short E-Mini and long the other market" and that, in the December 7 Example, the "strategy was to buy SPI which believed was oversold and long E-mini as a hedge." Regarding the 101-lot and 151-lot Opposite Orders, ZHAO stated that "[b]oth orders were placed with the intention to be filled,

however there were eventually cancelled possible [*sic*] due to" a "[c]hange in market situation" or that "[o]rders was [*sic*] not filled and do not want to reveal the trading information to the market." ZHAO also said that the "SPI moved ahead of the price willing to be paid and hence E-mini was ultimately pulled to prevent an incomplete spread trade where only one market is filled."

<u>December 22, 2015 Example</u>

44. Based on my review of the CME Trading Examples, the example of ZHAO's E-Mini trading activity from December 22, 2015 (the "December 22 Example") showed that ZHAO engaged in the following order and trade activity in the E-Mini futures contract market:

a. On December 22, 2015, at 3:45:31.626 and 3:45:37.238, ZHAO placed two Primary Orders to sell three E-Mini futures contracts at the price of $2,008.50, which was one level off the best prevailing offer price at the time the first three-lot order was placed and was at the best prevailing offer price at the time the second three-lot order was placed.

b. Second, approximately 12 and six seconds later, respectively, at 3:45:43.179, ZHAO placed an Opposite Order to buy 152 E-Mini futures contracts at the price of $2,008.00, which was one level off of the best prevailing bid price at that point in time and constituted approximately 65% of the order book to buy E-Minis at that price level and was cancelled 880 milliseconds later at 3:45:44.059. Under three seconds later, at 3:45:46.640, ZHAO placed a second Opposite Order to buy 152 E-Mini futures contracts at the price of

$2,008.25, which was at the best prevailing bid price at that point in time and constituted approximately 83% of the order book to buy E-Minis at that price level.

c. Third, approximately two milliseconds after placing the second 152-lot Opposite Order, both of ZHAO's three-lot Primary Orders to sell were filled at 3:45:46.642.

d. Fourth, approximately 703 milliseconds after those fills, at 3:45:47.345, ZHAO cancelled his Opposite Order of 152 lots to buy without any of the Opposite Order being filled. The 152-lot Opposite Order to buy had been active in the market for approximately 705 milliseconds before ZHAO cancelled it.

45. Based on my review of the June 22 Enclosure, I have learned that ZHAO stated, among other things, that his trades in the December 22 Example involved the "Scalping/averaging" and "Spread trade" strategies that "were implemented simultaneously." ZHAO stated that the two 152-lot Opposite Orders (¶ 44(b) above) were part of a "SPI/Mini Spread" strategy and the two three-lot Primary Orders (¶ 44(a) above) in the example were part of a "Scalping" strategy. Regarding the two 152-lot Opposite Orders, ZHAO stated that the "orders were placed in the market with the intention to be traded." ZHAO said that his spread trades were in the opposite direction to trades in the SPI and that they were "cancelled possibly because the market has moved up" or "due to a change in the SPI market." ZHAO said the

"E-mini SP was believed to be oversold relative to SPI . . . hence strategy was to buy E-mini and sell SPI as a spread."

March 17, 2016 Example

46. Based on my review of the CME Trading Examples, the example of ZHAO's E-Mini trading activity from March 17, 2016 (the "March 17 Example") showed that ZHAO engaged in the following order and trade activity in the E-Mini futures contract market:

a. On March 17, 2016, at 3:44:44.616, ZHAO placed a Primary Order to buy four E-Mini futures contracts at the price of $2,026.50, which was one level off the best prevailing bid price at that point in time.

b. Second, approximately eight seconds later, at 3:44:52.145, ZHAO placed an Opposite Order to sell 72 E-Mini futures contracts at the price of $2,027.50, which was two levels off the best prevailing offer price at that point in time and constituted approximately 30% of the order book to sell E-Minis at that price level, and was cancelled 1,039 milliseconds later at 3:44:53.184. Approximately two seconds later, at 3:44:55.914, ZHAO placed a second Opposite Order to sell 82 E-Mini futures contracts at the price of $2,027.25, which was one level off the best prevailing offer price at that point in time and constituted approximately 41% of the order book to sell E-Minis at that price level, and was cancelled 974 milliseconds later at 3:44:56.888. Approximately nine seconds later, at 3:45:05.914, ZHAO placed a third Opposite Order to sell 72 E-Mini futures contracts at the price of $2,027.00, which was one level off the best prevailing offer price at that point in time and constituted approximately 13% of the order book to sell E-Minis at that price level, and was cancelled 911 milliseconds later at 3:45:06.825. Finally, approximately four seconds later, at 3:45:10.792, ZHAO placed a fourth Opposite Order to sell 152 E-Mini futures contracts at the price of $2,026.75, which was at the best prevailing offer price at that point in time and constituted approximately 58% of the order book to sell E-Minis at that price level.

c. Third, approximately one millisecond after placing the 152-lot Opposite Order, ZHAO's four-lot Primary Order to buy was filled at 3:45:10.793.

d. Fourth, approximately 777 milliseconds after that fill, at 3:45:11.570, ZHAO cancelled his Opposite Order of 152 lots to sell without any of the Opposite Order being filled. The 152-lot Opposite Order to sell had been active in the market for approximately 778 milliseconds before ZHAO cancelled it.

47. Based on my review of the June 22 Enclosure, I have learned that ZHAO stated, among other things, that his trades in the March 17 Example involved "2 mix strategies [that] were used at the same time," namely, "Scalping" and "Spread trade." ZHAO stated that the two 72-lot, 82-lot, and 152-lot Opposite Orders (¶ 46(b) above) were part of his "SPI/Mini Spread" strategy and the four-lot Primary Order (¶ 46(a) above) in the example was part of a "Scalping" strategy. Regarding the two 72-lot, 82-lot, and 152-lot orders, ZHAO stated that "[t]hese orders were placed with the

intention to be filled and ultimately be spread with the SPI." ZHAO said that his "strategy was to sell E-mini and buy SPI as a spread" and that his spread trades "were placed and cancelled in short period may possibly [*sic*] due to the changing market price." ZHAO also explained that his scalping and spread trade "strategies do not relate to each other" and that the spread trade strategy "was not used with the intention to achieve orders" placed as part of his scalping strategy.

ZHAO's Trading Activity in the CME Trading
Examples Is Consistent with Spoofing, Not Spread Trading

48. Your Affiant has reviewed ZHAO's trading activity in the CME Trading Examples and, based on that review, has determined that certain of ZHAO's Opposite Orders in each CME Trading Example (*see* ¶¶ 42, 44, and 46 above)—specifically, the Opposite Orders that were pending in the market at the time ZHAO executed a Primary Order in each example—are contained within ZHAO's trading activity that was the subject of the analysis discussed in paragraphs 24 to 27 above. As noted above in paragraph 24 above, an expert reviewed that analysis of ZHAO's E-Mini trading activity and concluded that the pattern of ZHAO's trading activity during the Relevant Period was consistent with a practice of spoofing.

49. Your Affiant has also reviewed the explanation regarding ZHAO's trading activity in the June 22 Letter and the June 22 Enclosure (*i.e.*, that ZHAO was engaged in, among other things, spread trading in the CME Trading Examples). Based on my training and experience, Your Affiant knows that spread trading is a technique that can be used to take advantage of price discrepancies and involves simultaneously taking long and short positions in different futures contracts with the

hopes that the profits on one leg of the spread will be greater than the losses on the other leg of the spread. Your Affiant knows that spread trading between two different futures contracts markets involves a trader simultaneously buying futures contracts in one market and selling futures contracts in another market.

50. Based on Your Affiant's review of the June 22 Letter and June 22 Enclosure, and my training and experience regarding spread trading, if in the CME Trading Examples ZHAO was engaged in spread trading between the E-Mini and SPI futures markets, one would expect to see trading activity by ZHAO in SPI at substantially the same time as ZHAO's trading activity in E-Mini.

51. Your Affiant has reviewed trade logs containing ZHAO's trading of SPI futures contracts on the Australian Securities Exchange, and audit trail logs that ZHAO provided to the CME Group regarding his SPI trading activity, both of which covered the same dates and times as the trades in the CME Trading Examples (*i.e.*, December 7, 2015; December 22, 2015; and March 17, 2016). Based on my review of the trading and audit trail logs, Your Affiant (i) has not identified any corresponding trades in the SPI at substantially the same time as ZHAO's E-Mini trading activity in the CME Trading Examples that one would expect to find if ZHAO was engaged in spread trading between the E-Mini and SPI; (ii) believes that the absence of simultaneous E-Mini and SPI trades by ZHAO indicates that ZHAO's trading activity in the E-Mini was not consistent with spread trading, and (iii) has concluded that ZHAO's explanation in the June 22 Letter and June 22 Enclosure that he was engaged in a spread trading strategy in the CME Trading Examples is not

consistent with the trade and audit trail logs of ZHAO's trading activity in the E-Mini and SPI.

ZHAO's False Statements to the CME Regarding
His E-Mini Trading Activity in the CME Trading Examples

52. As set forth in paragraphs 43, 45, and 47 above, in the June 22 Enclosure, ZHAO asserted that the Opposite Orders in the CME Trading Examples were entered as part of a spread trading strategy involving E-Mini and SPI futures contracts and that the Opposite Orders were placed with the intent to execute them. As discussed in paragraphs 48 and 49 above, however, ZHAO's trading activity set forth in the CME Trading Examples was consistent with spoofing, not spread trading.

53. Based on the facts set forth above, there is probable cause to believe that ZHAO made materially false, fictitious, and fraudulent statements and representations to the CME in the course of its investigation into ZHAO's trading activity, specifically, ZHAO's statements in the June 22 Enclosure that:

a. In the December 7 Example, his 101-lot and 151-lot Opposite Orders "were placed with the intention to be filled";

b. In the December 22 Example, his two 152-lot Opposite Orders "were placed in the market with the intention to be traded"; and

c. In the March 17 Example, his two 72-lot, 82-lot, and 152-lot Opposite Orders "were placed with the intention to be filled and ultimately be spread with the SPI."

## CONCLUSION

54. Based on the foregoing, there is probable cause to believe that ZHAO participated and engaged in: (i) wire fraud, in violation of Title 18, United States Code, Section 1343; (ii) commodities fraud, in violation of Title 18, United States Code, Section 1348(1); (iii) spoofing, in violation of Title 7, United States Code, Sections 6c(a)(5)(C) and 13(a)(2); and (iv) false statements, in violation of Title 7, United States Code, Section 13(a)(4).

A. WESLEY NEVENS
Special Agent
Federal Bureau of Investigation

Signed and sworn to before me this 11 day
of January, 2018, in Chicago, Illinois

Jeffrey Cole

HON. JEFFREY COLE
United States Magistrate Judge