

|                                    |                                                                                                                                                                                                                                                                                                         |                                                 |                         |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------|
| Form 1<br>Page 1<br>Execution Page | <b>U.S. SECURITIES AND EXCHANGE COMMISSION</b><br><b>WASHINGTON, D.C. 20549</b><br><br><b>APPLICATION FOR, AND AMENDMENTS TO APPLICATION</b><br><b>FOR, REGISTRATION AS A NATIONAL SECURITIES EXCHANGE</b><br><b>OR EXEMPTION FROM REGISTRATION PURSUANT TO</b><br><b>SECTION 5 OF THE EXCHANGE ACT</b> | Date filed<br>(MM/DD/YY)<br><br><b>04/15/19</b> | OFFICIAL<br>USE<br>ONLY |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------|

WARNING: Failure to keep this form current and to file accurate supplementary information on a timely basis, or the failure to keep accurate books and records or otherwise to comply with the provisions of law applying to the conduct of the applicant would violate the federal securities laws and may result in disciplinary, administrative or criminal action.

INTENTIONAL MISSTATEMENTS OR OMISSIONS OF FACTS  
MAY CONSTITUTE CRIMINAL VIOLATIONS

☐ APPLICATION
 ☒ AMENDMENT

1. State the name of the applicant: Cboe EDGA Exchange, Inc.
2. Provide the applicant's primary street address (Do not use a P.O. Box):  
400 South LaSalle Street  
Chicago, Illinois 60605
3. Provide the applicant's mailing address (if different):  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Provide the business telephone and facsimile number:  
(913) 815-7000 (Telephone) (913) 815-7119 (Facsimile)
5. Provide the name, title and telephone number of a contact employee:  
Anders Franzon SVP, Deputy General Counsel, Cboe EDGA Exchange, Inc. (913) 815-7154  
 (Name) (Title) (Telephone Number)
6. Provide the name and address of counsel for the applicant:  
Pat Sexton  
400 S. LaSalle Street  
Chicago, IL 60605
7. Provide the date that applicant's fiscal year ends: December 31
8. Indicate legal status of the applicant: ☒ Corporation ☐ Sole Partnership ☐ Partnership  
☐ Limited Liability Company ☐ Other (specify): \_\_\_\_\_

If other than a sole proprietor, indicate the date and place where applicant obtained its legal status (e.g. state where incorporated, place where partnership agreement was filed or where applicant entity was formed):  
 (a) Date (MM/DD/YY): 11/01/07 (b) State/Country of formation: Delaware/United States of America  
 (c) Statute under which applicant was organized: General Corporation Law of the State of Delaware

**EXECUTION:**  
 The applicant consents that service of any civil action brought by, or notice of any proceeding before, the Securities and Exchange Commission in connection with the applicant's activities may be given by registered or certified mail or confirmed telegram to the applicant's contact employee at the main address, or mailing address if different, given in Items 2 and 3. The undersigned, being first duly sworn, deposes and says that he/she has executed this form on behalf of, and with the authority of, said applicant. The undersigned and applicant represent that the information and statement contained herein, including exhibits, schedules, or other documents attached hereto, and other information filed herewith, all of which are made a part hereof, are current, true and complete.

Date: 04/15/19  
 (MM/DD/YY)

By: [Signature]  
 (Signature)

Cboe EDGA Exchange, Inc.  
 (Name of Applicant)

Anders Franzon, SVP, Deputy General Counsel  
 (Printed Name and Title)

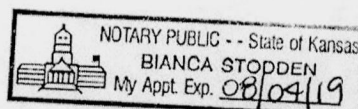
Subscribed and sworn before me this 15th day of April, 2019 by Brian Stettin  
 (Month) (Year) (Notary Public)

My Commission expires 08/04/19 County of Johnson State of Kansas

This page must always be completed in full with original, manual signature and notarization.  
 Affix notary stamp or seal where applicable.



19003797





April 15, 2019

**Via Federal Express**

Ms. Jeanette Marshall  
Securities and Exchange Commission  
Division of Trading and Markets  
100 F Street, N.E.  
Mail Stop 6628  
Washington, DC 20549-0001

SEC  
Mail Processing  
Section  
APR 16 2019  
Washington DC  
406

Re: ***Cboe EDGA Exchange, Inc.  
Form 1 Amendment***

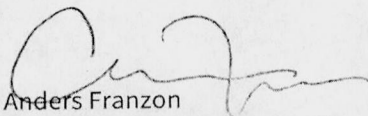
Dear Jeanette:

On behalf of Cboe EDGA Exchange, Inc. (or the "Exchange"), and in connection with the Cboe Form 1 that is on file with the Securities and Exchange Commission ("Commission"), enclosed please find one original and two copies of the Execution Page to Form 1 as well as the following exhibit<sup>1</sup>:

- Exhibit M (updated to provide a list of firms currently approved as members or other users of the Exchange)

This amendment is filed in accordance with SEC Rule 6a-2 and is intended to replace Exhibit M currently on file with the Commission. Please do not hesitate to contact me if you have any questions or require anything further.

Sincerely,

  
Anders Franzon  
SVP, Deputy General Counsel

Enclosures

<sup>1</sup> See Attachment for a comprehensive list of updates to Exhibit M



Attachment

*Summary of change(s) made to Exhibit M:*

- Gair Loch Enterprises Ltd. (sponsored by Merrill Lynch, Pierce, Fenner & Smith Incorporated) approved on EDGA Exchange, Inc.

**Exhibit M**

**Exhibit Request:**

Provide an alphabetical list of all members, participants, subscribers or other users, including the following information:

1. Name,
2. Date of election to membership or acceptance as a participant, subscriber or other user,
3. Principal business address and telephone number,
4. If member, participant, subscriber or other user is an individual, the name of the entity with which such individual is associated and the relationship of such individual to the entity (e.g., partner, officer, director, employee, etc.),
5. Describe the type of activities primarily engaged in by the member, participant, subscriber, or other user (e.g., floor broker, specialist, odd lot dealer, other market maker, proprietary trader, non-broker dealer, inactive or other functions). A person shall be "primarily engaged" in an activity or function for purposes of this item when that activity or function is the one in which that person is engaged for the majority of their time. When more than one type of person at an entity engages in any of the six types of activities or functions enumerated in this item, identify each type (e.g., proprietary trader, Registered Competitive Trader and Registered Competitive Market Maker) and state the number of members, participants, subscribers, or other users in each, and
6. The class of membership, participation or subscription or other access.

**Response:**

Attached please find a list of the current Members and Sponsored Participants accepted as Users of the Exchange.

| Company Name                           | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User          | Address                                                                          | Phone Number    | Primary Activities                                                                        |
|----------------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|----------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------|
| ABN AMRO Clearing Chicago LLC          | 10/15/2008        | 10/1/2010         | 5/25/2010          | 5/27/2010          | 5/13/1985           | 9/24/2010         | Member TPH            | 175 W Jackson Boulevard<br>Suite 400<br>Chicago, IL 60604                        | 312-604-8000    | Clearing, Transact Business with the Public, Brokerage                                    |
| ACS Execution Services, LLC            | 1/15/2016         | 1/15/2016         | 1/15/2016          | 1/15/2016          | NA                  | NA                | Member TPH            | 12 Broad Street<br>2nd Floor<br>Red Bank, NJ 07701                               | 732-204-8999    | Proprietary Trading                                                                       |
| Agency Desk, LLC                       | 7/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 590 Madison Avenue<br>21st Floor<br>New York, NY 10022                           | 212-935-9835    | Market Maker                                                                              |
| Akuna Securities LLC                   | 9/15/2015         | NA                | NA                 | 8/14/2017          | 2/2/2012            | 2/12/2015         | Member TPH            | 333 S Wabash Avenue<br>Suite 2600<br>Chicago, IL 60604                           | 312-994-4840    | Market Maker, Proprietary Trading                                                         |
| All Rise Trading LLC                   | NA                | NA                | NA                 | NA                 | 8/14/2018           | NA                | Member TPH            | 141 W. Jackson Blvd., Suite 300A,<br>Chicago, IL 60604                           | 312-493-2147    | Floor Broker                                                                              |
| Alpha Direct LLC                       | 8/20/2015         | 8/20/2015         | 8/20/2015          | 8/20/2015          | NA                  | NA                | Sponsored Participant | 533 2nd Street<br>Encinitas, CA 92024                                            | 858-947-8650    | Proprietary Trading                                                                       |
| Alpha Trading, LP                      | 10/24/2017        | 10/24/2017        | 10/24/2017         | 10/24/2017         | NA                  | NA                | Member TPH            | 640 W California Avenue<br>Sunnyvale, CA 94086                                   | 408-990-1940    | Market Maker, Proprietary Trading                                                         |
| Alpha Trading, LP                      | 2/22/2019         | 2/22/2019         | 2/22/2019          | 2/22/2019          | NA                  | NA                | Member TPH            | 640 W California Avenue<br>Sunnyvale, CA 94086                                   | 408-990-1940    | Market Maker, Proprietary Trading                                                         |
| Alpine Securities Corporation          | 11/3/2008         | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Member TPH            | 39 Exchange Place<br>Salt Lake City, UT 84111                                    | 801-355-5588    | Agency                                                                                    |
| AMS Derivatives B.V.                   | NA                | NA                | NA                 | NA                 | 12/1/2017           | NA                | Member TPH            | Strawinskylaan 3095<br>Amsterdam, 1077ZX<br>Netherlands                          | 31-020-708-7000 | Proprietary Trading                                                                       |
| Apex Clearing Corporation              | 6/5/2012          | 6/5/2012          | 6/5/2012           | 6/5/2012           | 6/6/2012            | 6/6/2012          | Member TPH            | One Dallas Center<br>350 N St. Paul, Suite 1300<br>Dallas, TX 75201              | 214-765-1055    | Clearing, Transact Business with the Public                                               |
| Archipelago Securities LLC             | 8/18/2008         | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 353 N Clark Street<br>Suite 3200<br>Chicago, IL 60654                            | 312-836-6700    | Limited Routing Facility of ICE affiliated Exchanges                                      |
| Athena Capital Research, LLC           | 7/1/2009          | 10/20/2010        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 440 9th Avenue<br>11th Floor<br>New York, NY 10001                               | 212-931-9056    | Proprietary Trading                                                                       |
| ATM Execution LLC dba Cowen Electronic | 3/15/2012         | 3/15/2012         | 3/21/2012          | 3/21/2012          | NA                  | NA                | Member TPH            | 599 Lexington Avenue<br>21st Floor<br>New York, NY 10022                         | 646-562-1010    | Public Customer Business                                                                  |
| Axos Financial LLC                     | 10/15/2009        | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 1200 Landmark Center<br>1299 Farnam Street Suite 800<br>Omaha, NE 68102          | 402-384-6100    | Clearing Services                                                                         |
| Barclays Capital Inc.                  | 8/18/2008         | 10/1/2010         | 5/14/2010          | 5/14/2010          | 9/22/2008           | 10/6/2010         | Member TPH            | 745 7th Avenue<br>New York, NY 10019                                             | 212-526-7000    | Clearing, Market Maker, Transact Business with the Public, Brokerage, Proprietary Trading |
| Bay Crest Partners, LLC                | 10/15/2008        | NA                | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 40 Wall Street<br>42nd Floor<br>New York, NY 10005                               | 212-480-1400    | Agency                                                                                    |
| Belvedere Trading LLC                  | 11/1/2011         | 3/1/2012          | 11/29/2011         | 10/16/2018         | 1/3/2005            | 4/4/2011          | Member TPH            | 10 S Riverside Plaza<br>Suite 2100<br>Chicago, IL 60606                          | 312-893-3750    | Market Maker, Proprietary Trading                                                         |
| Benjamin & Jerold Brokerage I LLC      | 10/1/2009         | 12/11/2017        | 12/11/2017         | 12/11/2017         | NA                  | NA                | Member TPH            | 80 Broad Street<br>6th Floor<br>New York, NY 10005                               | 646-558-0055    | Agency                                                                                    |
| BGC Financial, LP                      | 8/17/2009         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | One Seaport Plaza<br>19th Floor<br>New York, NY 10038                            | 646-346-7000    | Agency                                                                                    |
| Bloomberg Tradebook LLC                | 10/23/2008        | 10/4/2010         | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 919 3rd Avenue<br>New York, NY 10022                                             | 646-324-3178    | Agency                                                                                    |
| Bluefin Trading, LLC                   | 8/3/2009          | 6/1/2015          | 9/27/2013          | 8/13/2013          | 4/27/2009           | NA                | Member TPH            | 3 Park Avenue<br>37th Floor<br>New York, NY 10016                                | 212-457-9150    | Market Maker, Proprietary Trading                                                         |
| BMO Capital Markets Corp.              | 8/18/2008         | 11/15/2010        | 7/15/2014          | 7/15/2014          | 10/8/2013           | 11/15/2013        | Member TPH            | 3 Times Square<br>New York, NY 10036                                             | 212-885-4000    | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| BMT Trading, LLC                       | 2/1/2010          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 800 3rd Avenue<br>New York, NY 10022                                             | 212-813-0870    | Proprietary Trading                                                                       |
| BNP Paribas Securities Corp.           | 8/18/2008         | 9/15/2010         | 5/25/2010          | 5/27/2010          | 1/5/2005            | 10/15/2010        | Member TPH            | 787 7th Avenue<br>New York, NY 10019                                             | 212-841-2000    | Clearing, Order Flow Provider, Proprietary Trading, Transact Business with the Public     |
| BNY Mellon Capital Markets, LLC        | NA                | NA                | NA                 | 1/17/2017          | NA                  | NA                | Member TPH            | 101 Barclay Street<br>New York, NY 10286                                         | 212-315-4972    | Market Maker                                                                              |
| Boerboel Capital LLC                   | 11/17/2017        | NA                | NA                 | NA                 | 2/1/2017            | NA                | Member TPH            | 300 N LaSalle Street<br>Suite 2060<br>Chicago, IL 60654                          | 708-967-6843    | Market Maker                                                                              |
| Boerboel Capital LLC                   | 1/30/2019         | 1/30/2019         | 1/30/2019          | 1/30/2019          | NA                  | NA                | Sponsored Participant | 300 N LaSalle Street<br>Suite 2060<br>Chicago, IL 60654                          | 708-967-6843    | Market Maker                                                                              |
| Boerboel Trading LP                    | 10/15/2018        | 10/15/2018        | 10/15/2018         | 10/15/2018         | NA                  | NA                | Sponsored Participant | Maples Corporate Services<br>PO Box 309, Ugland House<br>Cayman Islands KY1-1104 | #####           | Proprietary Trading                                                                       |
| BofA Securities, Inc.                  | 9/19/2018         | 9/19/2018         | 9/19/2018          | 9/19/2018          | NA                  | NA                | Member TPH            | One Bryant Park<br>New York, NY 10036                                            | 201-671-5685    | Clearing Services, Firm Proprietary Trading, Public Customer Business                     |
| BTIG, LLC                              | 8/18/2008         | 11/15/2010        | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 600 Montgomery Street<br>6th Floor<br>San Francisco, CA 94111                    | 415-248-2200    | Market Maker                                                                              |
| C&C Trading LLC                        | 8/18/2008         | 10/11/2010        | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 71 Arch Street<br>14th Floor<br>Greenwich, CT 06830                              | 212-706-1227    | Proprietary Trading                                                                       |
| Canaccord Genuity LLC                  | 10/1/2013         | 10/1/2013         | 6/10/2010          | 6/10/2010          | NA                  | NA                | Member TPH            | 535 Madison Avenue<br>New York, NY 10022                                         | 212-389-8000    | Market Maker                                                                              |
| Canadian Imperial Holdings, Inc.       | 10/15/2008        | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 300 Madison Avenue<br>5th Floor<br>New York, NY 10017                            | 212-856-3877    | Proprietary Trading                                                                       |
| Cantor Fitzgerald & Co.                | 10/23/2008        | 2/13/2015         | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 110 E 59th Street<br>4th Floor<br>New York, NY 10022                             | 212-938-5000    | Agency, Institutional Trading                                                             |
| Capital Institutional Services, Inc.   | 8/18/2008         | NA                | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1700 Pacific Avenue<br>Suite 1100<br>Dallas, TX 75201                            | 214-720-0055    | Agency                                                                                    |
| Cardinal Capital Management, LLC       | 1/24/2019         | NA                | NA                 | NA                 | 10/1/2007           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 2200A<br>Chicago, IL 60604                      | 312-477-8400    | Market Maker/Proprietary                                                                  |
| Cboe Trading, Inc.                     | 10/23/2008        | 9/1/2010          | 5/14/2010          | 5/14/2010          | NA                  | 4/18/2018         | Member TPH            | 8050 Marshall Drive<br>Suite 120<br>Lenexa, KS 66214                             | 913-815-7000    | Limited Routing Facility of Cboe affiliated Exchanges                                     |
| CF Global Trading, LLC                 | 10/23/2008        | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 60 E 42nd Street<br>Suite 1455<br>New York, NY 10165                             | 212-888-4711    | Market Maker                                                                              |
| Charles Schwab & Co., Inc.             | NA                | NA                | NA                 | 4/3/2017           | 6/2/1980            | NA                | Member TPH            | 211 Main Street<br>San Francisco, CA 94105                                       | 415-636-7000    | Clearing, Transact Business with the Public                                               |

| Company Name                                | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User          | Address                                                           | Phone Number | Primary Activities                                                                        |
|---------------------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|-------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------|
| CIBC World Markets Corp.                    | 8/18/2008         | 11/15/2010        | NA                 | NA                 | 2/14/1973           | NA                | Member TPH            | 425 Lexington Avenue<br>New York, NY 10017                        | 212-856-4000 | Clearing, Transact Business with the Public                                               |
| Citadel Securities LLC                      | 10/23/2008        | 10/1/2010         | 5/14/2010          | 5/14/2010          | 4/17/2002           | 10/7/2010         | Member TPH            | 131 S Dearborn Street<br>32nd Floor<br>Chicago, IL 60603          | 312-395-2100 | Market Maker, Order Flow Provider, Brokerage                                              |
| Citi Order Routing and Execution, LLC       | 8/18/2008         | 9/15/2010         | 5/25/2010          | 5/27/2010          | 10/1/2008           | 9/24/2010         | Member TPH            | 11 Ewall Street<br>Mount Pleasant, SC 29464                       | 843-789-2080 | Clearing, Transact Business with the Public                                               |
| Citigroup Derivatives Markets Inc.          | 2/15/2018         | NA                | NA                 | 2/15/2018          | 12/3/2004           | 2/25/2011         | Member TPH            | 130 Cheshire Lane<br>Suite 102<br>Minnetonka, MN 55305            | 212-723-2960 | Market Maker                                                                              |
| Citigroup Global Markets Inc.               | 9/24/2008         | 12/15/2010        | 5/25/2010          | 5/27/2010          | 5/2/2011            | NA                | Member TPH            | 390-388 Greenwich Street<br>New York, NY 10013                    | 212-816-6000 | Clearing, Proprietary Trading, Transact Business with the Public                          |
| Clarksons Platou Securities, Inc.           | NA                | NA                | 1/15/2015          | NA                 | NA                  | NA                | Member TPH            | 280 Park Avenue<br>21st Floor<br>New York, NY 10017               | 212-317-7080 | Public Customer Business                                                                  |
| Clear Street, LLC                           | 3/18/2019         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 55 Broadway<br>Suite 2102<br>New York, NY 10006                   | 646-738-4068 | Public Customer Business, Clearing, Proprietary Trading                                   |
| Clearpool Execution Services, LLC           | 5/15/2014         | 5/15/2014         | 6/16/2014          | 6/16/2014          | NA                  | NA                | Member TPH            | 17 State Street<br>36th Floor<br>New York, NY 10004               | 212-531-8500 | Public Customer Business                                                                  |
| CLSA Americas, LLC                          | NA                | NA                | 5/21/2013          | 5/21/2013          | NA                  | NA                | Member TPH            | 1301 Avenue of the Americas<br>15th Floor<br>New York, NY 10019   | 212-549-5097 | Agency                                                                                    |
| CM-CIC Market Solutions, Inc.               | 8/18/2008         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 520 Madison Avenue<br>New York, NY 10022                          | 212-659-6292 | Agency                                                                                    |
| CMT Fund XXV Limited                        | 7/2/2012          | 7/2/2012          | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 500 W Monroe Street<br>Suite 2630<br>Chicago, IL 60661            | 312-320-7897 | Agency                                                                                    |
| CMT Trading LLC                             | 3/17/2014         | 3/17/2014         | 3/5/2014           | 3/5/2014           | NA                  | NA                | Member TPH            | 500 W Monroe Street<br>Suite 2630<br>Chicago, IL 60661            | 312-930-9050 | Market Maker, Proprietary Trading                                                         |
| CMZ Trading, LLC                            | NA                | NA                | NA                 | NA                 | 10/1/2004           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 826<br>Chicago, IL 60604         | 312-604-3310 | Market Maker, Proprietary Trading                                                         |
| CODA Markets, Inc.                          | 10/15/2008        | 10/4/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 2624 Patriot Boulevard<br>Glenview, IL 60026                      | 224-521-2700 | ATS                                                                                       |
| Cognitive Capital, LLC                      | NA                | NA                | NA                 | NA                 | 5/13/2004           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 1620<br>Chicago, IL 60604        | 312-431-0400 | Proprietary Trading                                                                       |
| Comhar Capital Markets, LLC                 | 2/27/2017         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 311 S Wacker Drive<br>Suite 2280A<br>Chicago, IL 60606            | 872-205-0190 | Proprietary Trading                                                                       |
| Consolidated Trading, LLC                   | NA                | NA                | NA                 | NA                 | 1/2/2002            | NA                | Member TPH            | 71 S Wacker Drive<br>Suite 2300<br>Chicago, IL 60606              | 312-360-7300 | Market Maker                                                                              |
| Cowen and Company, LLC                      | 8/18/2008         | 10/7/2010         | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 599 Lexington Avenue<br>20th Floor<br>New York, NY 10022          | 646-562-1010 | Market Maker                                                                              |
| Cowen Execution Services LLC                | 10/15/2008        | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1633 Broadway<br>48th Floor<br>New York, NY 10019                 | 800-367-8998 | Full Service                                                                              |
| Cowen Prime Services LLC                    | 3/15/2011         | 3/15/2011         | NA                 | NA                 | NA                  | NA                | Member TPH            | 599 Lexington Avenue<br>21st Floor<br>New York, NY 10022          | 646-562-1010 | Public Customer Business, Proprietary Trading                                             |
| Credit Suisse Securities (USA) LLC          | 9/3/2008          | 10/1/2010         | 5/25/2010          | 5/27/2010          | 8/14/1981           | 10/8/2010         | Member TPH            | 11 Madison Avenue<br>New York, NY 10010                           | 212-325-2000 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| Critical Trading, LLC                       | 7/1/2014          | 6/8/2018          | NA                 | 6/8/2018           | NA                  | NA                | Member TPH            | 120 W 45th Street<br>15th Floor<br>New York, NY 10036             | 646-918-0529 | Market Maker, Proprietary Trading                                                         |
| CSS, LLC                                    | NA                | NA                | NA                 | NA                 | 8/21/1998           | NA                | Member TPH            | 175 W Jackson Boulevard<br>Suite 440<br>Chicago, IL 60604         | 312-542-8505 | Proprietary Trading                                                                       |
| CTC, LLC                                    | 3/15/2018         | NA                | NA                 | NA                 | 3/25/1998           | 3/3/2011          | Member TPH            | 440 S LaSalle Street<br>4th Floor<br>Chicago, IL 60605            | 312-863-8000 | Market Maker                                                                              |
| Cutler Group, LP                            | 4/1/2010          | 10/6/2010         | NA                 | 10/16/2015         | 4/5/1999            | 9/4/2018          | Member TPH            | 101 Montgomery Street<br>Suite 700<br>San Francisco, CA 94104     | 415-293-3956 | Market Maker, Proprietary Trading                                                         |
| Dash Financial Technologies LLC             | 10/23/2008        | 7/2/2012          | 6/9/2010           | 6/9/2010           | 5/19/2000           | 9/30/2010         | Member TPH            | 311 S Wacker Drive<br>Suite 1000<br>Chicago, IL 60606             | 312-986-2006 | Clearing, Floor Broker, Order Flow Provider, Transact Business with the Public, Brokerage |
| Deutsche Bank Securities Inc.               | 10/15/2008        | 10/11/2010        | 5/21/2010          | 5/21/2010          | 4/25/1996           | 8/15/2011         | Member TPH            | 60 Wall Street<br>New York, NY 10005                              | 212-250-2500 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| DRW Securities, LLC                         | 9/1/2009          | 11/1/2010         | 5/25/2010          | 5/27/2010          | 11/23/1998          | 1/22/2016         | Member TPH            | 540 W Madison Street<br>Suite 2500<br>Chicago, IL 60661           | 312-542-1000 | Market Maker, Proprietary Trading                                                         |
| DRW Singapore Ltd.                          | 11/19/2018        | NA                | NA                 | 11/19/2018         | NA                  | NA                | Sponsored Participant | 8 Marina View<br>Asia Square Tower 1   #32-05<br>Singapore 018960 | 312-542-1005 | Proprietary Trading                                                                       |
| Dynamic Technology Lab Pte. Ltd.            | 11/5/2018         | 11/5/2018         | 11/5/2018          | 11/5/2018          | NA                  | NA                | Sponsored Participant | 07-00, 178 Clemenceau Avenue<br>Singapore 239926                  | 656-610-4693 | Proprietary Trading                                                                       |
| E D & F Man Capital Markets Inc.            | NA                | NA                | NA                 | NA                 | 3/1/2019            | NA                | Member TPH            | 140 E. 45th Street<br>10th Floor<br>New York, NY 10017            | 212-618-2800 | Clearing, Public Customer Business                                                        |
| E*TRADE Securities LLC                      | NA                | NA                | NA                 | 6/10/2010          | NA                  | NA                | Member TPH            | 11 Times Square<br>32nd Floor<br>New York, NY 10036               | 646-521-4300 | Public Customer Business                                                                  |
| Electronic Transaction Clearing, Inc.       | 10/23/2008        | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 660 S Figueroa Street<br>Los Angeles, CA 90017                    | 949-533-1885 | Market Maker                                                                              |
| Essex Radez LLC                             | NA                | 10/1/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 440 S LaSalle Street<br>Suite 1111<br>Chicago, IL 60605           | 312-212-1815 | Market Maker                                                                              |
| Evercore Group LLC                          | NA                | NA                | 5/10/2017          | NA                 | NA                  | NA                | Member TPH            | 55 E 52nd Street<br>New York, NY 10055                            | 212-857-3100 | Public Customer Business                                                                  |
| FIS Brokerage & Securities Services LLC     | 8/18/2008         | 10/1/2010         | 5/6/2010           | 5/6/2010           | NA                  | NA                | Member TPH            | 2100 Enterprise Avenue<br>Geneva, IL 60134                        | 630-482-7100 | Agency                                                                                    |
| Flow Traders U.S. Institutional Trading LLC | NA                | NA                | 6/1/2016           | NA                 | NA                  | NA                | Member TPH            | 1114 Avenue of the Americas<br>4th Floor<br>New York, NY 10036    | 917-210-5000 | Riskless Principal                                                                        |
| Flow Traders U.S. LLC                       | 10/1/2009         | 8/1/2012          | 2/28/2014          | 2/28/2014          | 8/31/2010           | NA                | Member TPH            | 1114 Avenue of the Americas<br>4th Floor<br>New York, NY 10036    | 917-210-5000 | Proprietary Trading                                                                       |
| G1 Execution Services, LLC                  | 8/18/2008         | 12/1/2010         | 4/17/2010          | 4/17/2010          | NA                  | NA                | Member TPH            | 175 W Jackson Boulevard<br>Suite 1700<br>Chicago, IL 60604        | 312-362-0404 | Market Maker                                                                              |
| Gair Loch Enterprises Ltd.                  | 2/22/2019         | 2/22/2019         | 4/8/2019           | 4/8/2019           | NA                  | NA                | Member TPH            | 540 W. Madison<br>Suite 2500<br>Chicago, IL 60661                 | 312-542-1193 | Proprietary Trading                                                                       |

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|----------------------------------------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|--------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------|
| Gelber Securities, LLC                                         | 5/1/2015          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 350 N Orleans Street<br>7th Floor<br>Chicago, IL 60654                         | 312-408-4354 | Market Maker, Proprietary Trading                                                         |
| Geneva Stock, LLC                                              | NA                | NA                | NA                 | NA                 | 4/6/2001            | NA                | Member TPH            | 440 S LaSalle Street<br>Suite 1711<br>Chicago, IL 60605                        | 312-362-4404 | Market Maker                                                                              |
| Global Execution Brokers, LP                                   | 2/1/2010          | 10/5/2010         | 12/1/2015          | 10/15/2015         | 12/23/2003          | 9/24/2010         | Member TPH            | 401 City Avenue<br>Bala Cynwyd, PA 19004                                       | 610-617-2600 | Floor Broker, Transact Business with the Public, Brokerage                                |
| Global HFT Management, LLC                                     | 10/1/2010         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 800 3rd Avenue<br>New York, NY 10022                                           | 212-813-0870 | Proprietary Trading                                                                       |
| Goldman Sachs & Co. LLC                                        | 10/23/2008        | 10/12/2010        | 5/14/2010          | 5/14/2010          | 2/21/1973           | 10/8/2010         | Member TPH            | 200 West Street<br>New York, NY 10282                                          | 212-902-1000 | Clearing, Market Maker, Proprietary Trading, Transact Business with the Public, Brokerage |
| Gordon, Haskett Capital Corporation                            | NA                | NA                | NA                 | 5/2/2016           | NA                  | NA                | Member TPH            | 441 Lexington Avenue<br>10th Floor<br>New York, NY 10017                       | 212-883-0600 | Agency, Institutional Trading                                                             |
| Green Street Trading, LLC                                      | 11/1/2011         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 660 Newport Center Drive<br>Suite 600<br>Newport Beach, CA 92660               | 214-749-4730 | Agency                                                                                    |
| Group One Trading, LP                                          | 6/2/2015          | NA                | NA                 | 9/29/2015          | 11/23/1994          | NA                | Member TPH            | 440 S LaSalle Street<br>Suite 3232<br>Chicago, IL 60605                        | 312-347-8864 | Market Maker                                                                              |
| GTS Securities LLC                                             | 12/17/2013        | 5/1/2012          | 6/2/2014           | 6/2/2014           | NA                  | NA                | Member TPH            | 545 Madison Avenue<br>15th Floor<br>New York, NY 10022                         | 212-715-2830 | Market Maker, Proprietary Trading                                                         |
| Hainey Investments Limited                                     | 6/16/2014         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | Thermistoki Dervi 41 #806-807<br>Nicosia, Cyprus                               | 704-248-8221 | Proprietary Trading                                                                       |
| HAP Trading, LLC                                               | 10/1/2009         | 11/15/2010        | NA                 | 6/2/2010           | 3/16/2001           | NA                | Member TPH            | 395 Hudson Street<br>Suite 701<br>New York, NY 10014                           | 212-380-5100 | Market Maker, Proprietary Trading                                                         |
| Hardcastle Trading USA LLC                                     | 4/15/2009         | NA                | 5/25/2010          | 5/27/2010          | 5/16/2005           | NA                | Member TPH            | 755 Secaucus Road<br>Suite F-1110<br>Secaucus, NJ 07094                        | 201-305-8888 | Proprietary Trading                                                                       |
| Headlands Technologies LLC                                     | 10/15/2018        | 10/15/2018        | 10/15/2018         | 10/15/2018         | NA                  | NA                | Sponsored Participant | 155 N. Wacker Drive, Suite 1900<br>Chicago, IL 60606                           | 312-601-8649 | Proprietary Trading                                                                       |
| Hehmeyer, LLC                                                  | 10/3/2016         | 10/3/2016         | 10/3/2016          | 10/3/2016          | NA                  | NA                | Sponsored Participant | 601 S LaSalle Street<br>2nd Floor<br>Chicago, IL 60605                         | 312-327-4112 | Proprietary Trading                                                                       |
| Henning-Carey Proprietary Trading, LLC                         | 8/15/2012         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 141 W Jackson Boulevard<br>Suite 1801<br>Chicago, IL 60604                     | 312-789-8764 | Proprietary Trading                                                                       |
| Highbridge Capital Management, LLC                             | 10/23/2008        | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 9 West 57th Street<br>27th Floor<br>New York, NY 10019                         | 212-287-4900 | Proprietary Trading                                                                       |
| Hilltop Securities Inc.                                        | 10/23/2008        | 9/1/2010          | NA                 | 5/21/2013          | 10/1/2010           | NA                | Member TPH            | 1201 Elm Street<br>Suite 3500<br>Dallas, TX 75270                              | 214-859-1800 | Clearing, Transact Business with the Public                                               |
| HRT Execution Services LLC                                     | 8/18/2008         | 10/1/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 100 S Wacker Drive<br>Suite 300<br>Chicago, IL 60606                           | 312-924-4777 | Market Maker, Proprietary Trading                                                         |
| HRT Financial LLC                                              | 2/1/2010          | 10/1/2010         | 5/18/2010          | 5/18/2010          | 1/24/2011           | 1/24/2011         | Member TPH            | 4 World Trade Center<br>150 Greenwich Street, 57th Floor<br>New York, NY 10007 | 212-293-1444 | Proprietary Trading                                                                       |
| HSBC Securities (USA) Inc.                                     | 4/3/2017          | 4/3/2017          | 4/3/2017           | 4/3/2017           | 11/21/2005          | NA                | Member TPH            | 452 Fifth Avenue<br>New York, NY 10018                                         | 224-880-7116 | Clearing, Transact Business with the Public                                               |
| ICAP Corporates LLC                                            | NA                | NA                | 3/28/2013          | NA                 | NA                  | NA                | Member TPH            | Harborside 5<br>Hudson Street, Suite 1200<br>Jersey City, NJ 07311             | 212-341-9944 | Agency                                                                                    |
| IEX Services LLC                                               | 10/1/2013         | 10/1/2013         | 9/24/2013          | 9/24/2013          | NA                  | NA                | Member TPH            | 4 World Trade Center<br>44th Floor<br>New York, NY 10007                       | 646-343-2000 | Limited Routing Facility of IEX affiliated Exchanges                                      |
| IMC-Chicago LLC dba IMC Financial Markets                      | 8/18/2008         | 10/1/2010         | 5/25/2010          | 5/27/2010          | 7/5/2000            | 9/24/2010         | Member TPH            | 233 S Wacker Drive<br>Suite 4300<br>Chicago, IL 60606                          | 312-244-3300 | Market Maker, Proprietary Trading                                                         |
| IMC-Chicago LLC dba IMC Financial Markets                      | 11/5/2018         | 11/5/2018         | 11/5/2018          | 11/5/2018          | NA                  | NA                | Sponsored Participant | 233 S Wacker Drive<br>Suite 4300<br>Chicago, IL 60606                          | 312-244-3300 | Market Maker, Proprietary Trading                                                         |
| Industrial and Commercial Bank of China Financial Services LLC | 5/15/2014         | 5/15/2014         | NA                 | NA                 | NA                  | NA                | Member TPH            | 1633 Broadway<br>28th Floor<br>New York, NY 10019                              | 212-993-7300 | Clearing Services                                                                         |
| Instinet LLC                                                   | 8/18/2008         | 9/1/2010          | 5/14/2010          | 5/14/2010          | 12/29/2009          | 10/6/2010         | Member TPH            | Worldwide Plaza<br>309 W 49th Street<br>New York, NY 10019                     | 212-310-9500 | Clearing, Transact Business with the Public, Brokerage                                    |
| Interactive Brokers Corp.                                      | NA                | NA                | NA                 | NA                 | 4/21/2009           | 10/6/2010         | Member TPH            | 8 Greenwich Office Park<br>Greenwich, CT 06831                                 | 203-618-5700 | Floor Broker, Brokerage                                                                   |
| Interactive Brokers LLC                                        | 8/18/2008         | 9/15/2010         | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | One Pickwick Plaza<br>2nd Floor<br>Greenwich, CT 06830                         | 203-618-5710 | Full Service                                                                              |
| International Correspondent Trading, Inc.                      | 8/18/2008         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | One University Plaza<br>Suite 301<br>Hackensack, NJ 07601                      | 201-222-9300 | Agency                                                                                    |
| Israel A. Englander & Co., LLC                                 | NA                | NA                | NA                 | NA                 | 10/27/1995          | 9/24/2010         | Member TPH            | 666 5th Avenue<br>14th Floor<br>New York, NY 10103                             | 212-841-4567 | Floor Broker, Transact Business with the Public, Brokerage                                |
| ISTRA, LLC                                                     | 12/15/2011        | 12/15/2011        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 230 Park Avenue<br>10th Floor<br>New York, NY 10169                            | 718-618-4929 | Proprietary Trading                                                                       |
| ITG Inc.                                                       | 8/18/2008         | 10/1/2010         | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | One Liberty Plaza<br>165 Broadway, 4th Floor<br>New York, NY 10006             | 212-588-4000 | Agency                                                                                    |
| J.P. Morgan Securities LLC                                     | 8/18/2008         | 9/15/2010         | 5/14/2010          | 5/14/2010          | 10/29/1985          | 11/18/2010        | Member TPH            | 383 Madison Avenue<br>New York, NY 10179                                       | 212-272-2000 | Clearing, Transact Business with the Public                                               |
| Jane Street Capital, LLC                                       | 5/1/2009          | 11/15/2010        | 5/14/2010          | 5/14/2010          | 9/4/2012            | 1/2/2019          | Member TPH            | 250 Vesey Street<br>5th Floor<br>New York, NY 10281                            | 646-759-6000 | Market Maker, Proprietary Trading                                                         |
| Jane Street Execution Services LLC                             | 1/24/2019         | 1/24/2019         | 1/24/2019          | 1/24/2019          | NA                  | NA                | Member TPH            | 250 Vesey Street<br>6th Floor<br>New York, NY 10281                            | 646-759-6381 | Proprietary Trading                                                                       |
| Jane Street Options, LLC                                       | 4/15/2016         | NA                | NA                 | 11/9/2018          | 5/2/2005            | 1/2/2019          | Member TPH            | 250 Vesey Street<br>5th Floor<br>New York, NY 10281                            | 646-759-6000 | Market Maker                                                                              |
| Jefferies Investment Advisers                                  | 7/1/2011          | 7/15/2011         | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 520 Madison Avenue<br>New York, NY 10022                                       | 212-323-3993 | Full Service                                                                              |
| Jefferies LLC                                                  | 10/23/2008        | 10/19/2010        | 5/25/2010          | 5/27/2010          | 7/9/2012            | 7/18/2012         | Member TPH            | 520 Madison Avenue<br>New York, NY 10022                                       | 212-284-2300 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| JNK Securities Corp.                                           | 11/17/2008        | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Member TPH            | 140 E 45th Street<br>27th Floor<br>New York, NY 10017                          | 212-885-6300 | Agency                                                                                    |
| Juliet Group, LLC                                              | 3/1/2011          | 3/1/2011          | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 240 E 35th Street<br>#3A<br>New York, NY 10016                                 | 646-360-0595 | Proprietary Trading                                                                       |

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|----------------------------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|----------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------|
| Juliet Labs, LLC                                   | 9/20/2017         | 9/20/2017         | 9/20/2017          | 9/20/2017          | NA                  | NA                | Sponsored Participant | 1 Northside Piers<br>Suite 14H<br>Brooklyn, NY 11249                       | 646-360-0595 | Proprietary Trading                                                                       |
| Jump Trading, LLC                                  | 8/18/2008         | 10/1/2010         | 5/14/2010          | 5/14/2010          | 4/2/2012            | 6/6/2017          | Member TPH            | 600 W Chicago Avenue<br>Suite 825<br>Chicago, IL 60654                     | 312-205-8900 | Market Maker, Proprietary Trading                                                         |
| Keefe, Bruyette & Woods, Inc.                      | 8/18/2008         | 12/1/2010         | 6/8/2010           | 6/8/2010           | NA                  | NA                | Member TPH            | 787 7th Avenue<br>New York, NY 10019                                       | 212-987-7777 | Agency                                                                                    |
| Lakeshore Securities, LP                           | NA                | NA                | NA                 | NA                 | 1/24/1983           | NA                | Member TPH            | 401 S LaSalle Street<br>Suite 1000<br>Chicago, IL 60605                    | 312-663-1307 | Clearing, Floor Broker, Market Maker, Transact Business with the Public                   |
| Lamberson Capital LLC                              | NA                | NA                | NA                 | NA                 | 3/23/2016           | NA                | Member TPH            | 71 S Wacker Drive<br>Suite 2300<br>Chicago, IL 60606                       | 312-360-7300 | Market Maker                                                                              |
| Lampert Capital Markets Inc.                       | NA                | 2/18/2014         | 2/26/2014          | NA                 | NA                  | NA                | Member TPH            | 444 Madison Avenue<br>Suite 401<br>New York, NY 10022                      | 646-833-4900 | Introducing Broker                                                                        |
| Lamport Capital, LC                                | NA                | NA                | NA                 | 3/15/2016          | NA                  | NA                | Member TPH            | 1900 Glades Road<br>Suite 205<br>Boca Raton, FL 33431                      | 561-883-0454 | Public Customer Business, Proprietary Trading                                             |
| Latour Trading LLC                                 | 8/17/2009         | 10/1/2010         | 5/26/2010          | 5/27/2010          | 4/8/2011            | NA                | Member TPH            | 377 Broadway<br>10th Floor<br>New York, NY 10013                           | 917-388-8000 | Proprietary Trading                                                                       |
| LEK Securities Corporation                         | 8/18/2008         | 10/1/2010         | 5/26/2010          | 5/27/2010          | 1/9/2001            | 9/24/2010         | Member TPH            | 1 Liberty Plaza<br>165 Broadway, 52nd Floor<br>New York, NY 10006          | 212-509-2300 | Clearing, Transact Business with the Public                                               |
| Lime Brokerage LLC                                 | 8/18/2008         | 10/1/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 11 E 44th Street<br>Suite 705<br>New York, NY 10017                        | 212-824-5000 | Transact Business with the Public                                                         |
| Liquidnet, Inc.                                    | 9/1/2009          | 9/15/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 498 7th Avenue<br>15th Floor<br>New York, NY 10018                         | 646-674-2000 | Agency                                                                                    |
| Lupo Securities, LLC                               | NA                | NA                | NA                 | NA                 | 8/1/1997            | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 2200A<br>Chicago, IL 60604                | 312-477-3400 | Market Maker, Proprietary Trading                                                         |
| Macquarie Capital (USA) Inc.                       | 12/1/2009         | NA                | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 125 W 55th Street<br>Level 22<br>New York, NY 10019                        | 212-231-1000 | Agency                                                                                    |
| Marathon Trading Group LLC                         | 2/13/2015         | NA                | NA                 | NA                 | 1/30/2013           | NA                | Member TPH            | 100 Matsonford Road<br>Building 2, Suite 107<br>Wayne, PA 19087            | 610-254-4890 | Market Maker, Proprietary Trading                                                         |
| Matrix Executions, LLC                             | 8/18/2008         | 11/15/2010        | NA                 | 11/12/2015         | 2/1/2008            | 10/26/2010        | Member TPH            | 601 S LaSalle Street<br>Suite 300<br>Chicago, IL 60605                     | 312-334-8000 | Transact Business with the Public, Brokerage                                              |
| Merrill Lynch Professional Clearing Corp.          | 8/18/2008         | 10/5/2010         | 5/14/2010          | 5/14/2010          | 4/8/1985            | 9/24/2010         | Member TPH            | One Bryant Park, 6th Floor<br>NY-100-06-01<br>New York, NY 10036           | 646-743-1295 | Clearing, Brokerage, Transact Business with the Public                                    |
| Merrill Lynch, Pierce, Fenner & Smith Incorporated | 8/18/2008         | 10/4/2010         | 5/14/2010          | 5/14/2010          | 4/25/1973           | 9/27/2010         | Member TPH            | One Bryant Park<br>New York, NY 10036                                      | 800-637-7455 | Clearing, Transact Business with the Public, Brokerage, Market Maker, Proprietary Trading |
| Mint Global Markets, Inc.                          | NA                | NA                | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1717 Route 6<br>Suite 102<br>Carmel, NY 10512                              | 800-874-3039 | Agency                                                                                    |
| Mizuho Securities USA, LLC                         | 6/1/2010          | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 320 Park Avenue<br>12th Floor<br>New York, NY 10022                        | 212-209-9300 | Agency                                                                                    |
| MKM Partners LLC                                   | 8/3/2009          | NA                | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 300 First Stamford Place<br>4th Floor East Wing<br>Stamford, CT 06902      | 203-861-9060 | Agency                                                                                    |
| Monadnock Capital Management, LP                   | NA                | NA                | NA                 | NA                 | 12/1/2014           | NA                | Member TPH            | 1845 Walnut Street<br>Suite 940<br>Philadelphia, PA 19103                  | 267-239-0367 | Market Maker                                                                              |
| Morgan Stanley & Co. International plc             | NA                | NA                | NA                 | NA                 | 4/12/2017           | NA                | Sponsored Participant | 20 Bank Street<br>Canary Wharf<br>London, UK E14 4A                        | #####        |                                                                                           |
| Morgan Stanley & Co. LLC                           | 10/23/2008        | 9/1/2010          | 5/14/2010          | 5/14/2010          | 8/20/1980           | 9/24/2010         | Member TPH            | 1585 Broadway<br>New York, NY 10036                                        | 212-761-4000 | Clearing, Market Maker, Proprietary Trading, Transact Business with the Public, Brokerage |
| Nasdaq Execution Services, LLC                     | 8/19/2008         | 9/1/2010          | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | One Liberty Plaza<br>165 Broadway<br>New York, NY 10006                    | 212-231-5100 | Limited Routing Facility of Nasdaq affiliated Exchanges                                   |
| National Financial Services LLC                    | 10/23/2008        | 10/4/2010         | 5/26/2010          | 5/27/2010          | 10/8/1987           | 4/16/2012         | Member TPH            | 200 Seaport Boulevard<br>Boston, MA 02210                                  | 617-563-7000 | Clearing, Floor Broker, Transact Business with the Public                                 |
| National Securities Corporation                    | 7/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | One Union Square<br>600 University Street, Suite 2900<br>Seattle, WA 98101 | 206-622-7200 | Agency                                                                                    |
| Needham & Company, LLC                             | 10/23/2008        | 10/1/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 445 Park Avenue<br>New York, NY 10022                                      | 212-371-8300 | Market Maker                                                                              |
| Nomura Securities International, Inc.              | 10/23/2008        | 10/1/2010         | 5/26/2010          | 5/27/2010          | 9/1/2009            | 11/16/2010        | Member TPH            | Worldwide Plaza<br>309 W 49th Street<br>New York, NY 10019                 | 212-667-9000 | Clearing, Transact Business with the Public, Proprietary Trading                          |
| Northern Trust Securities, Inc.                    | 8/18/2008         | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 50 S LaSalle Street<br>Chicago, IL 60603                                   | 312-557-2000 | Market Maker                                                                              |
| Old Mission Capital, LLC                           | 4/16/2012         | 4/16/2012         | 4/25/2012          | 4/25/2012          | 9/27/2017           | NA                | Member TPH            | 314 W Superior<br>Suite 200<br>Chicago, IL 60654                           | 312-260-3031 | Market Maker                                                                              |
| Olivetree Financial, LLC                           | NA                | NA                | 9/1/2016           | NA                 | NA                  | NA                | Member TPH            | 420 Lexington Avenue<br>Suite 800<br>New York, NY 10170                    | 646-930-8600 | Agency                                                                                    |
| Oppenheimer & Co. Inc.                             | NA                | NA                | NA                 | NA                 | 5/17/1973           | NA                | Member TPH            | 85 Broad Street<br>22nd, 24th Floors<br>New York, NY 10004                 | 212-668-8000 | Clearing, Transact Business with the Public                                               |
| Optiver US, LLC                                    | 6/15/2009         | NA                | NA                 | 5/30/2018          | 6/1/2005            | 9/24/2010         | Member TPH            | 130 E Randolph Street<br>14th Floor<br>Chicago, IL 60601                   | 312-821-9500 | Market Maker                                                                              |
| Oscar Gruss & Son Incorporated                     | 8/7/2017          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 430 Park Avenue<br>6th Floor<br>New York, NY 10022                         | 212-419-4000 | Agency                                                                                    |
| OTA LLC                                            | 8/18/2008         | 10/7/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | One Manhattanville Road<br>Purchase, NY 10577                              | 914-694-5800 | Institutional Trading                                                                     |
| PEAKS Capital Management LLC                       | 8/1/2014          | NA                | NA                 | 2/1/2016           | 12/2/1997           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 500<br>Chicago, IL 60604                  | 312-444-8000 | Proprietary Trading                                                                       |
| PEAKS Capital Management, LLC                      | 11/3/2008         | 7/15/2011         | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 141 W Jackson Boulevard<br>Suite 500<br>Chicago, IL 60604                  | 312-362-2401 | Market Maker                                                                              |
| Penserra Securities, LLC                           | 8/18/2008         | 10/6/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 4 Orinda Way<br>Suite 100-A<br>Orinda, CA 94563                            | 212-607-3190 | Agency                                                                                    |
| Pershing LLC                                       | 8/18/2008         | 9/15/2010         | 5/26/2010          | 5/27/2010          | 2/21/1973           | 9/28/2010         | Member TPH            | One Pershing Plaza<br>Jersey City, NJ 07399                                | 201-413-2000 | Clearing, Transact Business with the Public                                               |
| Phillip Capital Inc.                               | NA                | NA                | NA                 | 11/27/2017         | NA                  | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 3050<br>Chicago, IL 60604                 | 312-356-9001 | Clearing Services                                                                         |

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|------------------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|-----------------------------------------------------------------|--------------|-----------------------------------------------------------------------------|
| Pictet Overseas Inc.                     | 6/1/2015          | 6/1/2015          | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1000 de la Gauchetiere West Suite 3100 Montreal, Quebec H3B 4W5 | 514-288-8161 | Agency                                                                      |
| Piper Jaffray & Co.                      | 10/15/2008        | 11/15/2012        | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 800 Nicollet Mall Minneapolis, MN 55402                         | 612-303-6000 | Market Maker                                                                |
| Potamus Trading, LLC                     | 4/15/2013         | 4/15/2013         | 4/11/2013          | 4/11/2013          | NA                  | NA                | Member TPH            | 2 Seaport Lane 8th Floor Boston, MA 02210                       | 617-855-8722 | Market Maker, Proprietary Trading                                           |
| Princeton Alpha Management, LP           | 12/1/2015         | 12/1/2015         | 12/1/2015          | 12/1/2015          | NA                  | NA                | Sponsored Participant | 61 Princeton Hightstown Road West Windsor, NJ 08550             | 609-269-9212 | Agency                                                                      |
| Puma Capital, LLC                        | NA                | NA                | 6/15/2016          | 6/15/2016          | NA                  | NA                | Member TPH            | 287 Bowman Avenue 3rd Floor Purchase, NY 10577                  | 212-269-4100 | Market Maker, Proprietary Trading                                           |
| Pundion LLC                              | 2/27/2017         | 2/27/2017         | 2/27/2017          | 2/27/2017          | NA                  | NA                | Member TPH            | 230 Park Avenue 10th Floor New York, NY 10169                   | 718-618-4929 | Proprietary Trading                                                         |
| Pundion LLC                              | 10/15/2018        | 10/15/2018        | 10/15/2018         | 10/15/2018         | NA                  | NA                | Sponsored Participant | 230 Park Avenue 10th Floor New York, NY 10169                   | 718-618-4929 | Proprietary Trading                                                         |
| Quantbot Technologies LP                 | 3/27/2018         | 3/27/2018         | 3/27/2018          | 3/27/2018          | NA                  | NA                | Sponsored Participant | 369 Lexington Avenue New York, NY 10017                         | 212-622-6510 | Proprietary Trading                                                         |
| Quantex Clearing, LLC                    | 10/3/2011         | 12/27/2011        | 5/17/2011          | 5/17/2011          | NA                  | NA                | Member TPH            | 70 Hudson Street Hoboken, NJ 07030                              | 201-706-7157 | Clearing Services                                                           |
| Quantlab Securities LP                   | 8/18/2008         | 11/1/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 3 Greenway Plaza Suite 200 Houston, TX 77046                    | 713-333-3700 | Transact Business with the Public, Brokerage                                |
| Quiet Light Securities, LLC              | NA                | NA                | NA                 | NA                 | 5/1/2001            | NA                | Member TPH            | 141 W Jackson Boulevard Suite 2020A Chicago, IL 60604           | 312-431-0573 | Market Maker, Proprietary Trading                                           |
| R.W. Pressprich & Co.                    | 2/17/2009         | 11/15/2010        | 6/2/2010           | 6/2/2010           | NA                  | NA                | Member TPH            | 452 5th Avenue New York, NY 10018                               | 212-832-6200 | Agency                                                                      |
| Rackson Asset Management, LLC            | 10/1/2009         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 2000 Broadway Suite 22C New York, NY 10023                      | 212-724-2567 | Proprietary Trading                                                         |
| Radix Trading LLC                        | 11/5/2018         | 11/5/2018         | 11/5/2018          | 11/5/2018          | NA                  | NA                | Sponsored Participant | 353 N Clark Street Suite 3200 Chicago, IL 60654                 | 773-377-8080 | Research Firm                                                               |
| Rainier Investment Management, Inc.      | 1/4/2010          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 601 Union Street Suite 2801 Seattle, WA 98101                   | 206-518-6658 | Hedge Fund                                                                  |
| RBC Capital Markets, LLC                 | 9/18/2008         | 10/14/2010        | 5/14/2010          | 5/14/2010          | 11/24/1993          | 10/19/2010        | Member TPH            | 3 World Financial Center 200 Vesey Street New York, NY 10281    | 212-858-7000 | Clearing, Proprietary Trading, Transact Business with the Public            |
| Robert W. Baird & Co. Incorporated       | 10/23/2008        | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 777 E Wisconsin Avenue Milwaukee, WI 53202                      | 414-765-3500 | Market Maker                                                                |
| Ronin Capital, LLC                       | NA                | NA                | NA                 | NA                 | 12/17/2001          | NA                | Member TPH            | 350 N Orleans Street Suite 2N Chicago, IL 60654                 | 312-244-5000 | Market Maker                                                                |
| Ronin Professional, LLC                  | 8/18/2008         | 10/1/2010         | 5/25/2010          | 5/27/2010          | 1/2/2008            | 10/20/2010        | Member TPH            | 350 N Orleans Street Suite 2N Chicago, IL 60654                 | 312-244-5400 | Order Flow Provider, Transact Business with the Public, Brokerage           |
| Rosenblatt Securities Inc.               | 8/18/2008         | 10/6/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 40 Wall Street 59th Floor New York, NY 10005                    | 212-607-3100 | Agency                                                                      |
| Roth Capital Partners, LLC               | 8/18/2008         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 888 San Clemente Suite 400 Newport Beach, CA 92660              | 949-720-5700 | Market Maker                                                                |
| SAC Capital Advisors, LP                 | 10/23/2008        | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 72 Cummings Point Road Stamford, CT 06902                       | 203-890-2275 | Hedge Fund                                                                  |
| Safra Securities LLC                     | NA                | NA                | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 546 5th Avenue New York, NY 10036                               | 212-704-5500 | Market Maker                                                                |
| SageTrader, LLC                          | 3/1/2016          | 6/5/2017          | 6/5/2017           | 6/1/2016           | NA                  | NA                | Member TPH            | 340 Pine Street Suite 501 San Francisco, CA 94104               | 415-293-3894 | Public Customer Business                                                    |
| SAL Equity Trading, GP                   | 9/3/2008          | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 401 City Avenue Suite 220 Bala Cynwyd, PA 19004                 | 610-617-3000 | Agency, Institutional Trading                                               |
| Sanford C. Bernstein & Co, LLC           | 9/10/2008         | 10/21/2010        | 5/26/2010          | 5/27/2010          | 8/13/2013           | NA                | Member TPH            | 1345 Avenue of the Americas New York, NY 10105                  | 212-969-1000 | Clearing, Proprietary Trading, Transact Business with the Public            |
| Santander Investment Securities Inc.     | 4/15/2009         | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 45 E 53rd Street New York, NY 10022                             | 212-350-3500 | Institutional Trading                                                       |
| Scotia Capital (USA) Inc.                | 3/2/2009          | 9/15/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 250 Vesey Street New York, NY 10281                             | 212-225-6500 | Institutional Trading                                                       |
| Sea Otter Securities Group LLC           | 10/9/2018         | 10/9/2018         | NA                 | 10/9/2018          | NA                  | NA                | Sponsored Participant | 107 Grand Street 7th Floor New York, NY 10013                   | 646-762-9972 | Proprietary Trading                                                         |
| Seven Points Capital, LLC                | NA                | NA                | 5/14/2010          | NA                 | NA                  | NA                | Member TPH            | 805 3rd Avenue 15th Floor New York, NY 10022                    | 212-760-0760 | Agency                                                                      |
| SG Americas Securities, LLC              | 9/17/2008         | 11/15/2011        | 5/14/2010          | 5/14/2010          | 4/23/2004           | 1/2/2015          | Member TPH            | 245 Park Avenue New York, NY 10167                              | 212-278-6000 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage |
| Simplex Trading, LLC                     | 3/16/2015         | NA                | NA                 | 4/13/2017          | 8/12/2010           | 3/1/2017          | Member TPH            | 230 S LaSalle Street Suite 4-100 Chicago, IL 60604              | 312-360-2440 | Market Maker, Proprietary Trading                                           |
| SMBC Nikko Securities America, Inc.      | 8/7/2017          | 8/7/2017          | 8/7/2017           | 8/7/2017           | NA                  | NA                | Member TPH            | 277 Park Avenue 5th Floor New York, NY 10172                    | 212-224-5039 | Institutional Trading                                                       |
| SogoTrade, Inc.                          | NA                | NA                | NA                 | 6/19/2017          | NA                  | NA                | Member TPH            | 11 Broadway Suite 514 New York, NY 10004                        | 646-885-6486 | Public Customer Business                                                    |
| Stifel, Nicolaus & Company, Incorporated | 8/18/2008         | NA                | 6/2/2010           | 6/2/2010           | NA                  | NA                | Member TPH            | 501 N Broadway St. Louis, MO 63102                              | 314-342-2000 | Agency                                                                      |
| Summit Securities Group, LLC             | 7/16/2012         | 7/16/2012         | 8/20/2012          | 8/20/2012          | 6/6/2012            | 3/22/2019         | Member TPH            | 55 Broadway Suite 2102 New York, NY 10006                       | 646-738-4066 | Market Maker, Proprietary Trading                                           |
| Sumo Capital, LLC                        | 7/15/2013         | NA                | NA                 | 10/15/2015         | 3/3/2008            | NA                | Member TPH            | 440 S LaSalle Street Suite 2101 Chicago, IL 60605               | 312-324-0326 | Market Maker, Proprietary Trading                                           |
| SumRidge Partners, LLC                   | NA                | NA                | NA                 | 12/27/2017         | NA                  | NA                | Member TPH            | 111 Town Square Place Suite 320 Jersey City, NJ 07310           | 201-898-2520 | Proprietary Trading                                                         |
| Susquehanna Financial Group, LLLP        | 9/3/2008          | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 401 City Avenue Suite 220 Bala Cynwyd, PA 19004                 | 800-825-9550 | Agency, Institutional Trading                                               |
| Susquehanna Investment Group             | NA                | NA                | NA                 | NA                 | 5/1/1987            | NA                | Member TPH            | 401 City Avenue Suite 220 Bala Cynwyd, PA 19004                 | 610-617-2600 | Market Maker                                                                |

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|-----------------------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|-------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------|
| Susquehanna Securities                        | 10/15/2014        | 10/15/2014        | 10/15/2014         | 10/15/2014         | 4/4/1994            | 9/24/2010         | Member TPH            | 401 City Avenue<br>Suite 220<br>Bala Cynwyd, PA 19004                         | 610-617-2600 | Market Maker, Proprietary Trading                                           |
| SVB Leerink LLC                               | 8/18/2008         | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1 Federal Street<br>37th Floor<br>Boston, MA 02110                            | 617-918-4900 | Agency                                                                      |
| Synergy Capital Management, LLC               | 8/1/2016          | NA                | NA                 | NA                 | 6/5/2007            | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 1530<br>Chicago, IL 60604                    | 312-986-8869 | Proprietary Trading                                                         |
| TD Ameritrade Clearing, Inc.                  | 5/3/2011          | 5/3/2011          | NA                 | 5/27/2010          | NA                  | NA                | Member TPH            | 200 S 108th Avenue<br>Omaha, NE 68154                                         | 800-669-3900 | Public Customer Business, Clearing Services                                 |
| Telsey Advisory Group, LLC                    | 1/24/2011         | 8/15/2014         | NA                 | NA                 | NA                  | NA                | Member TPH            | 555 5th Avenue<br>7th Floor<br>New York, NY 10017                             | 212-973-9700 | Public Customer Business                                                    |
| Tewksbury Investment Fund, Ltd.               | 7/1/2011          | 7/1/2011          | 1/6/2015           | 1/8/2015           | NA                  | NA                | Sponsored Participant | Washington Mall I<br>20th Church Street, 4th Floor<br>Hamilton, HM 11 Bermuda | 610-971-5000 | Proprietary Trading                                                         |
| Tewksbury Investment Fund, Ltd.               | 10/23/2008        | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | Washington Mall I<br>20th Church Street, 4th Floor<br>Hamilton, HM 11 Bermuda | 212-310-7078 | Proprietary Trading                                                         |
| Themis Trading LLC                            | 8/18/2008         | 10/1/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 10 Town Square<br>Suite 100<br>Chatham, NJ 07928                              | 973-665-9600 | Agency                                                                      |
| ThinkTrade, LLC                               | 2/1/2010          | 10/20/2010        | 1/9/2015           | 1/9/2015           | NA                  | NA                | Sponsored Participant | 2210 Encintas Boulevard<br>Suite 1<br>Encintas, CA 92024                      | 760-452-2451 | Proprietary Trading                                                         |
| Timber Hill LLC                               | NA                | NA                | NA                 | NA                 | 12/27/1996          | 12/15/2010        | Member TPH            | One Pickwick Plaza<br>Suite 200<br>Greenwich, CT 06830                        | 203-618-5800 | Clearing, Market Maker                                                      |
| TJM Investments, LLC                          | NA                | NA                | NA                 | NA                 | 3/11/2013           | NA                | Member TPH            | 318 W Adams Street<br>9th Floor<br>Chicago, IL 60606                          | 312-432-5100 | Floor Broker, Transact Business with the Public                             |
| Tradebot Systems, Inc.                        | 8/18/2008         | 9/1/2010          | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1251 NW Briarcliff Parkway<br>Suite 700<br>Kansas City, MO 64116              | 816-285-6400 | Proprietary Trading                                                         |
| TradeStation Securities, Inc.                 | 8/18/2008         | 9/1/2010          | 5/25/2010          | 5/25/2010          | NA                  | NA                | Member TPH            | 8050 SW 10th Street<br>Suite 2000<br>Plantation, FL 33324                     | 954-652-7900 | Market Maker                                                                |
| TRC Helepolis, Ltd.                           | 12/11/2009        | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 377 Broadway<br>11th Floor<br>New York, NY 10013                              | 646-472-1792 | Proprietary Trading                                                         |
| TRC Markets LLC                               | 4/13/2017         | 4/13/2017         | 4/13/2017          | 4/13/2017          | NA                  | NA                | Member TPH            | 710 Johnnie Dodds Boulevard<br>Suite 300<br>Mt. Pleasant, SC 29464            | 917-388-8644 | Agency                                                                      |
| Trinity Executions, LLC                       | NA                | NA                | NA                 | NA                 | 11/1/2011           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 3900<br>Chicago, IL 60604                    | 312-878-4704 | Floor Broker, Transact Business with the Public                             |
| Tudor, Pickering, Holt & Co. Securities, Inc. | 8/18/2008         | 10/17/2011        | NA                 | NA                 | NA                  | NA                | Member TPH            | 1111 Bagby<br>Suite 4900<br>Houston, TX 77002                                 | 713-333-7100 | Agency                                                                      |
| Two Sigma Investments, LLC                    | 9/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 100 Avenue of the Americas<br>4th Floor<br>New York, NY 10013                 | 212-775-6678 | Proprietary Trading                                                         |
| Two Sigma Partners Master Fund, Ltd.          | 3/2/2009          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 100 Avenue of the Americas<br>4th Floor<br>New York, NY 10013                 | 212-775-6678 | Proprietary Trading                                                         |
| Two Sigma Securities, LLC                     | 7/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 100 Avenue of the Americas<br>4th Floor<br>New York, NY 10013                 | 646-292-6643 | Proprietary Trading                                                         |
| Two Sigma Securities, LLC                     | 10/1/2009         | 10/5/2010         | 5/27/2010          | 5/27/2010          | 9/15/2017           | 7/18/2018         | Member TPH            | 100 Avenue of the Americas<br>19th Floor<br>New York, NY 10013                | 212-625-5700 | Market Maker, Broker                                                        |
| U.S. Securities, Intl. Corp.                  | NA                | NA                | NA                 | NA                 | 7/3/1973            | NA                | Member TPH            | 120 Broadway<br>Suite 1017<br>New York, NY 10271                              | 212-227-0800 | Transact Business with the Public                                           |
| UBS Financial Services Inc.                   | NA                | NA                | NA                 | NA                 | 12/11/1972          | NA                | Member TPH            | 1200 Harbor Boulevard<br>Weehawken, NJ 07086                                  | 201-352-3000 | Clearing, Transact Business with the Public                                 |
| UBS Securities LLC                            | 10/15/2008        | 10/1/2010         | 4/12/2010          | 4/12/2010          | 10/1/1998           | 10/8/2010         | Member TPH            | 1285 Avenue of the Americas<br>New York, NY 10019                             | 203-719-3000 | Clearing, Proprietary Trading, Transact Business with the Public            |
| Ustocktrade Securities, Inc.                  | 4/17/2015         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 275 Grove Street<br>Suite 2-400<br>Newton, MA 02466                           | 617-340-3041 | Public Customer Business, Proprietary Trading                               |
| ViewTrade Securities, Inc.                    | 8/18/2008         | 11/15/2010        | 6/10/2010          | 6/10/2010          | NA                  | NA                | Member TPH            | 7280 W Palmetto Park Road<br>Suite 310<br>Boca Raton, FL 33433                | 561-620-0306 | Agency                                                                      |
| Virtu Americas LLC                            | 9/15/2009         | 10/14/2010        | 1/3/2011           | 1/3/2011           | 9/18/2009           | 3/17/2011         | Member TPH            | 300 Vesey Street<br>New York, NY 10282                                        | 646-682-6000 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage |
| Virtu Financial BD LLC                        | 11/17/2008        | 10/7/2010         | 5/27/2010          | 5/27/2010          | 3/1/2010            | 6/12/2012         | Member TPH            | 307 Camp Craft Road<br>Austin, TX 78743                                       | 800-544-7508 | Proprietary Trading                                                         |
| Virtu Financial Capital Markets LLC           | 8/18/2008         | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 300 Vesey Street<br>New York, NY 10282                                        | 212-418-0100 | Proprietary Trading                                                         |
| Vision Financial Markets LLC                  | 4/1/2009          | 11/15/2010        | 7/13/2012          | 7/13/2012          | 12/11/2006          | NA                | Member TPH            | 120 Long Ridge Road<br>3 North<br>Stamford, CT 06902                          | 203-388-2700 | Clearing, Transact Business with the Public                                 |
| Volant Execution, LLC                         | 6/15/2011         | NA                | NA                 | 10/1/2015          | 4/12/2005           | 9/24/2010         | Member TPH            | 111 W Jackson Boulevard<br>20th Floor<br>Chicago, IL 60604                    | 312-692-5000 | Clearing, Brokerage                                                         |
| Volant Liquidity, LLC                         | 4/15/2011         | NA                | 5/27/2010          | 5/27/2010          | 2/1/2010            | 3/23/2011         | Member TPH            | 250 Vesey Street<br>Suite 2801<br>New York, NY 10281                          | 646-804-7900 | Market Maker, Order Flow Provider, Brokerage                                |
| Wall Street Access                            | 11/3/2008         | 10/17/2011        | 5/27/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 17 Battery Place<br>11th Floor<br>New York, NY 10004                          | 212-709-9400 | Agency                                                                      |
| Walleye Trading LLC                           | 12/1/2008         | 11/12/2010        | NA                 | 4/17/2018          | 6/1/2006            | NA                | Member TPH            | 2800 Niagara Lane North<br>Plymouth, MN 55447                                 | 952-345-6611 | Market Maker                                                                |
| Wedbush Securities Inc.                       | 8/18/2008         | 9/1/2010          | 5/27/2010          | 5/27/2010          | 2/23/2012           | 3/8/2012          | Member TPH            | 1000 Wilshire Boulevard<br>Suite 900<br>Los Angeles, CA 90017                 | 213-688-8090 | Clearing                                                                    |
| Wells Fargo Clearing Services, LLC            | 7/1/2016          | NA                | NA                 | NA                 | 11/14/2016          | NA                | Member TPH            | One N Jefferson Avenue<br>Mail Code: H0004-050<br>St. Louis, MO 63103         | 314-875-3000 | Clearing, Transact Business with the Public                                 |
| Wells Fargo Securities, LLC                   | 8/18/2008         | 10/11/2010        | 6/9/2010           | 6/9/2010           | 4/1/2014            | 4/1/2014          | Member TPH            | 550 S Tryon Street, 6th Floor<br>D1086-060<br>Charlotte, NC 28202             | 704-410-1913 | Clearing, Proprietary Trading                                               |
| Western International Securities, Inc.        | 8/18/2008         | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Member TPH            | 70 S Lake Avenue<br>Suite 700<br>Pasadena, CA 91101                           | 626-793-7717 | Market Maker                                                                |
| Wolverine Execution Services, LLC             | 8/18/2008         | 10/19/2010        | 5/14/2010          | 5/14/2010          | 3/1/2006            | 9/24/2010         | Member TPH            | 175 W Jackson Boulevard<br>Suite 200<br>Chicago, IL 60604                     | 312-884-4000 | Clearing, Floor Broker, Transact Business with the Public, Brokerage        |
| Wolverine Securities, LLC                     | NA                | NA                | NA                 | 5/31/2017          | NA                  | NA                | Member TPH            | 175 W Jackson Boulevard<br>Suite 200<br>Chicago, IL 60604                     | 312-884-4000 | Market Maker                                                                |

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|--------------------------------|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|---------------|------------------------------------------------------------|--------------|--------------------------------------------------------------|
| Wolverine Trading, LLC         | 10/3/2011         | NA                | NA                 | 10/1/2015          | 7/12/1994           | 9/24/2010         | Member<br>TPH | 175 W Jackson Boulevard<br>Suite 200<br>Chicago, IL 60604  | 312-884-4000 | Market Maker, Proprietary Trading                            |
| X-Change Financial Access, LLC | NA                | NA                | NA                 | NA                 | 5/1/2003            | NA                | Member<br>TPH | 440 S LaSalle Street<br>Suite 2900<br>Chicago, IL 60605    | 312-235-0320 | Clearing, Floor Broker, Transact<br>Business with the Public |
| XR Securities LLC              | 1/15/2009         | 11/15/2010        | 5/10/2012          | 5/10/2012          | 11/30/2007          | NA                | Member<br>TPH | 550 W Jackson Boulevard<br>Suite 1000<br>Chicago, IL 60661 | 312-244-4500 | Market Maker, Proprietary Trading                            |