Forty-Five Minutes

Knight Capital, August 1, 2012

THE MECHANISM, IN BRIEF

The counter had been moved to an earlier place in the code. So the old program could not tell when an order was full. For about forty-five minutes, nothing outside it stopped it.

WHO IS NAMED, AND WHAT THE RECORD SAYS

Knight Capital Americas LLC (the firm, Respondent)	Settled with the regulator without admitting or denying its findings. No court found against them. [1] [9]
Daniel M. Hawke (chief, SEC Enforcement Market Abuse Unit)	Public official, named for his or her role in the public record. [9]

THE RECORD, STEP BY STEP

Each line is a fact the video states, in our words, with the number of the public source it rests on.

01 The chair

1. Knight Capital Americas LLC, Jersey City NJ; the event was on August 1, 2012, at the 9:30 a.m. market open. [1]
2. The holding account (the '33 Account') had a two-million-dollar gross position limit. [1]
3. Ninety-seven such emails went to a group of Knight personnel before the 9:30 open. [1]
4. 212 parent orders produced millions of child orders and over 4 million executions in 154 stocks, more than 397 million shares, in about 45 minutes; loss over $460 million. [1]
5. The 212 orders were small retail orders Knight had received from its customers. [1]
6. PMON, the position screen, relied on human monitoring, sent no automated alerts and did not display limits; the viewer had to know them. [1]

02 What your firm does all day

1. Knight's trading was about ten percent of all trading in listed US equities in 2011-2012. [1]
2. Lehman Brothers filed for bankruptcy on September 15, 2008, nearly four years before August 1, 2012. [2]
3. Knight executed trades for retail brokers (e.g. TD Ameritrade, E*Trade). [3]
4. SMARS is an automated high-speed router; it alone was about one percent or more of all US listed trading. [1]
5. SMARS takes 'parent' orders and sends 'child' orders to venues as needed until the parent is filled. [1]

03 The first small ask

1. NYSE's Retail Liquidity Program was scheduled to start August 1, 2012; Knight changed SMARS so its customers could take part. [1]
2. From July 27, 2012, the new code was deployed in stages to SMARS's eight servers on successive days. [1]
3. The new code repurposed a flag that formerly activated Power Peg, discontinued many years earlier but still present and callable; Knight intended to delete Power Peg. [1]
4. A technician did not copy the new code to one of the eight servers; no second technician reviewed it; no written procedure required one. [1]

04 Ninety-seven letters before the bell

1. From about 8:01 a.m. ET, an internal system sent automated 'BNET reject' emails referencing SMARS with the error 'Power Peg disabled', from pre-market orders. [1]
2. The emails were not designed as system alerts and personnel generally did not review them when received. [1]
3. The emails were real-time, caused by the deployment failure, a potential opportunity to fix the issue before the open; not acted on. [1]

05 Two hundred twelve orders

1. The seven servers with the new code processed RLP orders correctly; orders with the repurposed flag on the eighth server triggered Power Peg. [1]
2. The eighth server sent child orders continuously, without regard to executions already received. [1]
3. One part of Knight's order handling system recognized the parent orders were filled, but this was not communicated to SMARS. [1]
4. The 33 Account accumulated an unusually large position from the executions; it held positions from multiple sources so staff could not quickly determine their nature. [1]
5. For 75 of the stocks, Knight's executions comprised more than 20 percent of the trading volume and contributed to price moves of greater than five percent. [1]
6. In 37 stocks prices moved over ten percent and Knight was over 50 percent of volume; other participants got better or worse prices. [1]

06 The fix that fed it

1. Knight had no supervisory procedures for incident response on August 1. [1]
2. Knight stayed connected to the markets while its technology team tried to find the problem in live trading; orders kept going out. [1]
3. PMON could not stop orders and experienced delays in the high-volume event, making its reports inaccurate. [1]
4. Knight lacked controls to monitor SMARS output, such as comparing orders leaving SMARS with those that entered it. [1]
5. Knight's 9.5 percent limit-price control did not apply to orders received before the open for the opening auction, such as the 212. [1]
6. Knight uninstalled the new RLP code from the seven correctly deployed servers, which worsened the problem by activating Power Peg on those servers too. [1]
7. Knight needed clear guidance for technology personnel on when to disconnect a malfunctioning system from the market. [1]

07 The bill

1. Knight assumed a net long position of about $3.5 billion in 80 stocks and a net short position of about $3.15 billion in 74 stocks. [1]
2. Knight said clients were not negatively affected by the erroneous orders. [4]
3. Knight traded out of the entire erroneous position for a realized pre-tax loss of about $440 million (announced Aug 2, 2012). [4]
4. The SEC put the loss at more than $460 million; $460M / 45 min is about $10.2 million a minute (NYT: '$10 million a minute' on the $440M figure). [1]
5. Knight's 2011 net income was $115.2 million; the $440M loss was almost four times its annual profit. [5]
6. Knight shares fell 32 percent on Wednesday Aug 1 (33 percent per Bloomberg) and closed down 63 percent at $2.58 on Thursday Aug 2. [3]
7. The $440M loss was more than Knight's market value of $272 million on Aug 2; a CLSA analyst wrote Knight was 'at risk of bankruptcy'. [5]

08 The way out

1. Aug 6, 2012: $400 million equity financing; Jefferies conceived and structured it, with Blackstone, GETCO, Stephens, Stifel and TD Ameritrade. [6]
2. The investors bought 2 percent convertible preferred stock convertible at $1.50 per share, into about 267 million common shares. [7]
3. GETCO and Knight signed a merger agreement dated December 19, 2012; the combination formed KCG Holdings on July 1, 2013. [8]
4. Oct 16, 2013: the SEC's first enforcement action under the market access rule (Rule 15c3-5, adopted 2010), which requires brokers to control the risks of market access. [9]
5. Knight paid a $12 million civil penalty and settled without admitting or denying the findings. [1]

6. Daniel M. Hawke, chief of the SEC Enforcement Division's Market Abuse Unit: brokers must ask what would happen if each component malfunctions. [9]
7. October 2011: Knight's LMM desk used weekend disaster-recovery test data in live Monday trading, a loss of nearly $7.5 million; Knight responded narrowly. [1]

09 2005

1. When Power Peg was used, a cumulative quantity function counted executed shares and stopped child orders once the parent was filled. [1]
2. Knight ceased using Power Peg in 2003 and elected to leave the code on SMARS's production servers. [1]
3. In 2005 Knight moved the cumulative quantity function earlier in the SMARS code and did not retest Power Peg; the move disabled Power Peg's counting. [1]
4. The SEC described 'two critical technology missteps': the 2005 code move and the July 2012 deployment. [9]
5. The SEC: a written protocol requiring retesting of Power Peg in 2005, or a simple double-check of the July 2012 deployment, could have identified the problems. [1]

SOURCES

1. REGULATOR SEC, In the Matter of Knight Capital Americas LLC, Order Instituting Administrative and Cease-and-Desist Proceedings, Release No. 34-70694, File No. 3-15570, October 16, 2013
https://www.sec.gov/files/litigation/admin/2013/34-70694.pdf

2. REGULATOR Federal Reserve History (Federal Reserve System), John Weinberg, 'Support for Specific Institutions' (essay on the 2007-09 crisis; the Lehman Brothers bankruptcy filing date)
https://www.federalreservehistory.org/essays/support-for-specific-institutions

3. PRESS Nathaniel Popper, 'Knight Capital Says Trading Glitch Cost It $440 Million', The New York Times DealBook, August 2, 2012
https://dealbook.nytimes.com/2012/08/02/knight-capital-says-trading-mishap-cost-it-440-million/

4. COMPANY FILING Knight Capital Group, press release of August 2, 2012, 'Knight Capital Group Provides Update Regarding August 1st Disruption to Routing in NYSE-Listed Securities' (Form 8-K, Ex. 99.1)
https://www.sec.gov/Archives/edgar/data/0001060749/000119312512332176/d391111dex991.htm

5. PRESS Bloomberg News, 'Knight Has All Hands on Deck to Deal With $440 Million Bug', August 2, 2012 (read from the reprint on the website of Rep. Maxine Waters)
https://waters.house.gov/media-center/in-the-news/knight-has-all-hands-deck-deal-440-million-bug

6. COMPANY FILING Knight Capital Group, press release of August 6, 2012, 'Knight Capital Group Completes $400 Million Equity Financing Agreement' (Form 8-K, Ex. 99.1)
https://www.sec.gov/Archives/edgar/data/0001060749/000119312512338098/d392396dex991.htm

7. COMPANY FILING Knight Capital Group, Form 8-K, date of report August 6, 2012 (the $440 million loss; the $400 million convertible preferred purchase agreement)
https://www.sec.gov/Archives/edgar/data/0001060749/000119312512336167/d392288d8k.htm

8. COMPANY FILING Agreement and Plan of Merger among GETCO Holding Company, LLC, GA-GTCO, LLC and Knight Capital Group, Inc., dated as of December 19, 2012 (Form 8-K, Ex. 2.1; section 4.7 gives the trading loss as about $461.1 million and names the Power Peg code)
https://www.sec.gov/Archives/edgar/data/0001060749/000119312512513607/d457296dex21.htm

9. REGULATOR SEC press release 2013-222, 'SEC Charges Knight Capital With Violations of Market Access Rule', October 16, 2013
https://www.sec.gov/news/press-release/2013-222

Red Ink Files tells stories about money, power and the machines behind them. This file is a summary of the public record for one video; it is not financial, legal or investment advice. Facts are stated in our own words; read the sources for the full record. Found an error? Tell us in the comments under the video and we will correct this file. · RED_INK_FILES-003-Forty-Five_Minutes · written 2026-11-25