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An Inventory Diversion Case: "It's Only Inventory Shrinkage, Right?"

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Fraud Case and Convictions

Based on our experience with the discover of an inventory diversion fraud scheme, we developed this case based on a fraud scheme committed by employees in the same phosphate company where the authors were employed in the 1980s. Names and numbers have been changed to protect the innocent/guilty. The first author was involved with the investigation of the case, as well with the implementation of changes to procedure put in place to minimize the opportunity for this type of fraud scheme to occur. Since the fraud scheme involved only cash transactions, little of the company's losses were recovered, as the perpetrators had spent the money. The perpetrators were prosecuted; and, fortunately, the phosphate company was large enough to absorb the losses and made changes to their operations to reduce the opportunity for this type of fraud to occur in the future.

Introduction of Key Decision Makers and Fraud Perpetrators

This case is unique in that there were three parties involved, all employed by different companies. In addition, the fact that the diversion of physical inventory involved transport in railcars also makes the case unique. Typically, there are behavioral red flags that alert co-workers to the possibility that suspicious activity is occurring; in this case one of the perpetrators made large cash deposits to his bank, which alerted the federal authorities to the possibility the deposits were related to suspicious activity.

The key decision makers were the following individuals:

- The administration manager ("Joe"), who supervised the production, accounting, and distribution functions
- The distribution manager ("Bob"), whose responsibilities included supervision of the traffic division, whose manager was "Gary"
- "Gary," who supervised the railroad operations and truck loading/unloading operations

The organizational chart for ABC Chemicals' railcar loading operations is included in Figure 1. [See Figure 1, pg. 306]

The key perpetrators required that the following individuals all work the same weekend shift:

- "Jim," a weekend shift foreman who reported to "Gary"
- "Fred," a conductor employed by the rail company
- "Jeff," and "Harwin," who worked with Fred to perpetrate the diversion of the rail cars (employees of the rail company)
- "Roger" a fertilizer dealer who purchased the diverted inventory at a reduced cost (cash sale), recorded it as off-spec material purchased, and then sold the inventory at full cost to legitimate customers

Company Background, Industry Information/Best Practices, and the Scheme

In the 1980s and 1990s, the phosphate industry was one of the largest employers in Central Florida. Phosphate rock is a mineral containing, among other compounds, tricalcium phosphate. The phosphate rock was mined, and various fertilizer and animal nutrition products were manufactured. Most of ABC Chemicals'[1] revenue came from the fertilizer products. The two major granular fertilizer products resulting from this process were diammonium phosphate (DAP) and

[1] Name of the company changed.

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monoammonium phosphate (MAP). These two products provide nutrition to crops by providing phosphorus and nitrogen to the soil.

How DAP is Produced

When phosphate rock is reacted with sulfuric acid, it produces phosphoric acid and calcium sulfate, i.e., gypsum, as a byproduct. The phosphoric acid is concentrated and reacted with ammonia to produce DAP. According to https://www.cropnutrition.com/resource-library/diammonium-phosphate , the inputs required to produce one ton of DAP fertilizer are "approximately 1.5 to 2 tons of phosphate rock, 0.4 tons of sulfur (S) to dissolve the rock, and 0.2 tons of ammonia."

DAP (which has two ammonia molecules) is excellent for low pH or alkaline soil. DAP has a high pH (exceeding 7.5), so it is alkaline. When DAP is added to the soil, one of the ammonia molecules in DAP reverts to ammonia, eventually converting to nitrate, which enhances plant growth. DAP can also be used with other ingredients as a fire retardant to prevent the spread of a brush or forest fire. After the fire, the DAP then becomes a nutrient source for the soil.

How the Inventory Diversion was Accomplished

For ABC Chemicals, DAP is normally shipped in bulk in covered hopper rail cars holding about 100 tons of DAP each. At the time this theft occurred, DAP was selling for approximately $150 per ton making the value of product in each rail car around $15,000.

At the phosphate-producing plants in Central Florida, the local railroad would deliver empty hopper cars to a plant once a day, seven days a week, and at the same time pick up loaded hopper cars for delivery to the port of Tampa and/or other offsite locations.

The ABC Chemicals team that loaded the DAP into the rail cars reported to the distribution manager, while the ABC Chemical traffic group reported to the administration manager. Each rail car has an individual serial number identifying the car. Government and railroad regulations require that each railcar traveling on a railroad must have a Bill of Lading (BoL). The BoL is the document issued by a shipper to a railroad to ship a railcar to a destination. Among other information, the BoL lists the serial number of the railcar, identifies the product the car contains, the net weight of the product, the origin of the shipment, and its destination.

Best management practices in the phosphate industry require that product loading operations, railcar weighing, and BoL preparation always be conducted under the supervision of a senior manager.

ABC Chemicals' loading operation and BoL preparation was not supervised by a senior manager on weekends. Rather, management of the loading operation on weekends was left in the hands of the day shift supervisor. One of the shift supervisors, Jim, entered into a scheme with a conductor (Fred), engineer (Jeff), and switch man (Harwin) train crew who worked for the rail company[2]. The scheme also included collusion with a local fertilizer dealer (Roger) to misappropriate DAP. The scheme was quite simple; this was how it worked:

- As part of his regular duties, the shift supervisor (Jim) would receive orders from the operation manager before the manager left on Friday setting out the number of railcars to be loaded over the weekend.
- Then, left to his own devices, Jim would arrange to have one or two extra cars loaded with DAP during regular loading operations during the weekend. This was completed in the rail yard owned by ABC Chemicals.
- Jim would then prepare BoLs for only the number of cars ordered by the operation manager. The rail company train crew (which consisted of Fred, Jeff, and Harwin), working with Jim would continue the scheme by picking up all the loaded cars in the normal manner, being careful to keep the one or two cars without BoLs at the end of the train.

[2] AAR regulations prohibit private companies from operating on the railroad's tracks. ABC Chemicals owned the rail yard, and the railroad company was allowed to deliver empty and pick up loaded cars from certain tracks.

- After leaving the plant on their way to their destination, the crew would drop off the last two cars on a designated remote siding where the DAP could be picked up by the fertilizer dealer (Roger) who was part of the theft scheme.[3]
- Roger used a portable under-car unloader, or a front-end loader to collect the diverted DAP from the siding where the extra cars were left. He could then collect the DAP flowing from a hopper car door and convey it to a truck.
- On a subsequent return trip, Harwin would pick up these emptied rail cars and rejoin them with the other rail cars being returned to ABC Chemicals' rail yard.
- The fertilizer dealer (Roger) would pay the conductor in cash for the stolen DAP at a price significantly less than market price. The conductor would then divide the proceeds among his co-conspirators.
- The dealer (Roger) recorded the purchase in his books as "off-spec" DAP.

The off-spec DAP was considered scrap, in the sense that it was the result of warehouse sweeping or DAP that had gotten wet, so the quality was not as high as standard DAP. Most of the time, off-spec DAP was recycled, rather than sold.

How the Theft was Discovered and Fraud Case Epilogue

The theft was ultimately discovered when the conductor (Fred) began making regular cash deposits of more than $10,000 at a bank account he had set up at a local bank.[4] What made the scheme harder to detect was that ABC had a policy that allowed for a "shrinkage" allowance of 0.5 percent (typical for the industry) between the total weight of the product put into storage and the total weight of the product loaded out. This allowance was sanctioned due to the large volume of product being handled through storage and loading. With production of DAP at this facility amounting to more than 500,000 tons per year (TPY), the 0.5 percent shrink allowance would cover a variance of 2,500 tons of product over the course of a year.

The FBI began their investigation of the suspicious deposits by arriving at Joe's office on a Monday morning and asking questions about ABC Chemicals' weekend loading operations. The investigation led to a revision of weekend operations, while resulting in losses of several hundred thousand dollars' worth of DAP by the time the scheme was discovered and dismantled. The FBI investigated and prosecuted the fraudsters, but little of the money was recovered, since most of the diverted cash had been spent by the fraudsters. ABC Chemicals was large enough to absorb the loss, and management made changes to the weekend operations to improve control over the railcar loading operations.

Additional Materials for Students

Instructors might wish to provide additional background material to help the students answer the case questions and understand the case. Appendix A provides some information related to different fraud schemes and the loss amounts from the ACFE *2020 Report to the Nations*. Appendix B discusses how and when Suspicious Activity Reports (SARs) are filed. Appendix C includes information about the filing of Currency Transaction Reports (CTRs).

I. Fraud Case Requirements

Case Questions

1. Discuss some "red flags for fraud in this case. Identify these red flags in terms of the Fraud Triangle components: i.e., perceived non-shareable pressure, perceived opportunity, rationalization.

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[3] Note that fertilizer dealers receive their raw materials in bulk hopper cars and have the equipment to unload these cars. Hopper cars have two doors or gates along the bottom. Product is unloaded by opening each door. The doors could be opened manually. The flow of product could be controlled by how far each door is opened.

[4] Banks are required to file a Currency Transaction Report (CTR) for cash transactions greater than $10,000 but tellers can file a Suspicious Activity Report (SAR) for activities below or close to $10,000 that appear suspicious. For example, if a customer asks whether a CTR will be filed if he/she deposits $10,000 and then decides not to make the deposit upon discovering a CTR will be filed, a SAR would be filed by the teller regardless. In some cases, suspicious activity might be detected through the financial institution's system. These reports are filed with FINCEN (Financial Crimes Enforcement Network). More information about this process can be found in Appendices B and C.

2. How could information already in the accounting system have been used to minimize the opportunity for fraud? List three reports that might have drawn attention to the inventory diversion scheme.
3. Provide recommendations of controls and other activities that could be implemented to reduce the risk of fraudulent activity in inventory control.

4. Case Solutions

The full teaching note is available from the second author

Appendix A

Supplemental Case Information for Students

The ACFE 2020 Report to the Nations on Occupational Fraud and Abuse (the Report) (ACFE, 2020) discusses the various types of fraud schemes that have been investigated worldwide by Certified Fraud Examiners (CFEs). In their summary of findings, the Report indicates the most common type of fraud schemes investigated involved asset misappropriation. The company discussed in our case is a large phosphate mining/manufacturing company. The 2020 Report shows that 26 of the reported cases (median loss $475,000) were in mining companies, 185 cases (median loss $198,000) were in manufacturing companies. The report also discusses that when there are two or more perpetrators involved, losses increased significantly, suggesting that with several people "… working together might be better able to undermine the systems of separated duties and independent verifications that are at the heart of many anti-fraud controls" (page 48). With three or more perpetrators, the reported median loss was $350,000, while with two perpetrators, the reported median loss was $150,000 (ACFE, Figure 38).

Appendix B

Supplemental Information about Suspicious Activity Report (SAR) Filing Process

FINCEN (Financial Crimes Enforcement Network) oversees suspected money laundering activities reported by financial institutions. Financial institutions will often have an AML (Anti-Money Laundering) program set up to allow for the reporting of suspicious activities and large cash transactions. The AML officer is the coordinator of this program. Since 2013, all SARs are required to be filed electronically (using the Bank Secrecy Act E-Filing System), but the financial institution has an obligation to train employees (e.g., tellers) to recognize suspicious activity and file the reports as needed. Note that the person reported on the SAR is not informed of the filing of an SAR on their activity.

The identification of suspicious activities follows a process such as the one shown here:

*Source:*https://complyadvantage.com/knowledgebase/anti-money-laundering/transaction-monitoring/sars-suspicious-activity-reports/

Some examples of activities that might be flagged as suspicious include:

- Large transactions (cash transactions over $10,000 require a CTR, discussed in Appendix C)
- Transfers overseas
- Unusual account activity (e.g., a regular customer suddenly begins to deposit or withdraw large sums of money)

FINCEN shares information about suspicious activities with many agencies, including the FBI, ATF (Bureau of Alcohol, Tobacco, and Firearms), the IRS, and DEA (Drug Enforcement Agency), to name just a few.

For an example of the information required for the filing of a SAR, refer to: https://www.fdic.gov/formsdocuments/6710-06.pdf

Appendix C

Supplemental Information about the Currency Transaction Report (CTR) Process

Federal Regulation 31 CFR 1010 requires that a bank must file a CTR for "each transaction in currency[5] (deposit, withdrawal, exchange of currency, or other payment transfer) of more than $10,000 by, through, or to the bank." This $10,000 limit includes the aggregation of activity during one business day. In other words, if a customer who makes multiple deposits in one day that total $10,000 or more at different branches, a CTR must be filed. Any "structured transactions" also require a CTR filing. Structured transactions are those that are purposely organized to avoid having a CTR filed. A bank is required to file a SAR (see Appendix B) if there is suspicion of an individual or business using structured transactions to avoid CTR filing. FINCEN provides examples of structured transactions (see below):

The following scenarios are examples of structuring.

Examples of Structured Transactions

1. John has $15,000 in cash he obtained from selling his truck. John knows that if he deposits $15,000 in cash, his financial institution will be required to file a CTR. John instead deposits $7,500 in cash in the morning with one financial institution employee and comes back to the financial institution later in the day to another employee to deposit the remaining $7,500, hoping to evade the CTR reporting requirement.

2. Jane needs $18,000 in cash to pay for supplies for her wood-carving business. Jane cashes a $9,000 personal check at a financial institution on a Monday, then cashes another $9,000 personal check at the financial institution the following day. Jane cashed the checks separately and structured the transactions in an attempt to evade the CTR reporting requirement.

3. A married couple, John and Jane, sell a vehicle for $15,000 in cash. To evade the CTR reporting requirement, John and Jane structure their transactions using different accounts. John deposits $8,000 of that money into his and Jane's joint account in the morning. Later that day, Jane deposits $1,500 into the joint account, and then $5,500 into her sister's account, which is later transferred to John and Jane's joint account.

4. Bob wants to place $24,000 cash he earned from his illegal activities into the financial system by using a wire transfer. Bob knows his financial institution will file a CTR if he purchases a wire with over $10,000 currency in one day. To evade the CTR reporting requirement, Bob wires the $24,000 by purchasing wires with currency in $6,000 increments over a short period of time, occasionally skipping days in an attempt to prevent the financial institution from filing a CTR.

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Source: https://www.fincen.gov/sites/default/files/shared/CTRPamphlet.pdf

For an example of the CTR form and information collected, refer to: https://www.irs.gov/pub/irs-tege/fin104_ctr.pdf

[5] Defined as coin or paper legal tender used in exchange for goods and services. This currency can be US currency or any country's legal currency.

Figure 1: Organizational Chart for ABC Railcar Loading Operations