

**Derivatives Process**

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**Process Owner:** Scott Snyder (Vice President Risk Control), Greg Szczepan (Director of Finance), Jeanette Cover (Assistant Controller), and Bret Blackford (Director PMO, Change Management, and Compliance)

**Overview of Process:**

Arch Energy Resources (AER) executes all commodity trades on behalf of Arch Resources, Inc (Arch) and its subsidiaries

The trades executed by AER fall into four categories: risk management, asset optimization, trading and treasury. The risk management trades are used as a means to price-protect coal sales (domestic and international) by hedging in the wholesale markets. Asset optimization trades are executed to extract or add value to the existing positions. Trading transactions are made to take advantage of favorable market conditions. The Treasury department transactions include heating oil hedging and is the least frequently used category. AER and ACS hedging and trading authorizations are outlined in the Marketing & Trading (M&T) Risk Management Policy and Procedures (*M&T RMPP*). Oversight of the hedging and trading activity is performed by the Middle Office. The Middle Office monitors compliance to the risk policy daily and publishes market and credit risk reports that are distributed to various personnel including Senior Management and Accounting.

The strategy for hedging topics covered in this narrative are determined by Senior Management, with ongoing monitoring of the strategy and hedging program by the Board of Directors. Arch enters into various types of positions at management's discretion. Any strategy considers the committed coal sale tons and therefore may be outside the range if committed sales are less than budgeted. The diesel fuel hedges are now the responsibility of the Trading Department; the Director of Finance receives a quarterly update on positions. Additionally, the President AER discusses diesel fuel hedges in the monthly Risk Committee meeting.

**Initiating Transactions and Authorization**

The President of Arch Energy Resources , her delegated traders, and the Treasurer can execute exchange and OTC trades: the Trader(s) at AER Corporate, the President Arch Energy Resources, and the VP Finance and Treasury. *(See the M&T RMPP). Traditional Sales are treated as a different category of "Transactions" and fall out of the scope of this document.*

On a daily basis, the Middle Office emails the Negative Credit Report, which identifies counterparties that have exceeded their credit limit. This report identifies the counterparties that must have a credit override prior to the Company initiating any additional trades. The Market Risk Report is placed on the Risk Management Trading portal each day by the Middle Office and is reviewed by another knowledgeable and independent of the trading function employee prior to publication at least once per week. The report includes many key risk controls, economic factors and compliance aspects. The compliance aspects reported include when the daily/monthly/quarterly MTM loss limits are exceeded, trades that changed in Allegro, etc.

The Vice President Risk Control or his designee emails the M&T Risk Committee when position limits are exceeded and/or when the daily/monthly/quarterly MTM loss limits per policy are exceeded.

The Trading Desk implements trading strategies and keeps the AER business head informed when significant changes to the trading position are expected. Authorizations for individual transactions are documented daily on the New Transaction Report.

If the traders want to conduct a trade with a new counterparty, an email is sent to the Director of Finance for credit approval. The Director of Finance will follow up with an email to the traders granting approval and establishing the credit limit for the counterparty. The credit department or contracts department, but not any authorized traders, adds the counterparty to Allegro. Only then can the traders enter into an agreement into Allegro.

The Traders execute a trade through discussion via squawk box, email, telephone, instant messaging or electronic trading platform. Some trades are executed through brokers, while others are via Exchanges. All of the conversations via squawk box or instant messaging are recorded as support for a trade or in cases where actual agreed upon terms and conditions are questioned. These recorded messages also act as the non-written contract in cases where coal is shipped before a written contract is executed.

**Recording Transactions in Allegro (Trade Tracking Application)**

When the trade is complete, the trader enters the transaction information into Allegro and selects the Allegro trade book where it will be recorded (ex. Trading, Asset Management or Risk Management). These lowest level trade books are aggregated by Middle Office to reportable trade books where every transaction appears in one reporting level of the trade book. The underlying basis used for determining the appropriate book is based upon the purpose of the transaction. Transactions recorded in each book are based on the following1:

1. *Trading Book*: Transactions implemented to profit from market price changes and executed on behalf of AER. Strategies are originated by the Trading desk. The President Arch Energy Resources authorizes this activity. The trading desk tracks individual speculative positions using the Trading<initial> sub-books, all of which roll into the Trading book. Middle office only reports on the Trading book (and not any sub-book activity).

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1 Additional information on the trade books used is available in the Marketing & Trading (M&T) Risk Management Policy and Procedures (M&T RMPP)

1. *Asset Management Book*: Transactions that optimize Arch assets by capitalizing on the flexibility of those assets. Examples of Arch assets include Arch Coal Sales (ACS) contracts and the mining operations. Authorization comes from the Senior Vice President Domestic Thermal, Senior Vice President Metallurgical/International Thermal or the President Arch Energy Resources.
2. *Risk Management Book*: Transactions executed to manage market risk exposure on behalf of ACS (coals, Natural Gas, Freight, FX Options, Bunker Fuel and Allowances/Credits) are entered into based on product. This book is an extension of the sales team to support production/operations. Authorization comes from the Senior Vice President Domestic Thermal Sales, Senior Vice President Metallurgical/International Thermal or the President Arch Energy Resources, or an authorized sales person. *(See the M&T RMPP for details.)*

The system design of Allegro combines the ability to edit a trade with the ability to delete a trade resulting in traders having the ability to delete trades that have not been locked through the confirmation process. In order to compensate for the system design, if any trade is deleted, the Allegro system automatically sends an email alert to a set of predefined list of Arch employees. All transaction changes are also recorded in the application’s audit tables. Allegro has limited built-in edit checks to assist the user to enter necessary information when entering a trade. Additionally, trade tickets are numbered sequentially by the Allegro system. Any deleted trades are identifiable through gaps in the trade numbers.

**When the Trader enters the transaction information into Allegro, they also enter the requested accounting method (either Exempt-accrual, Cash Flow-OCI, Fair value Hedge-P&L, or MTM-P&L) using the Accounting Treatment Matrix. The matrix is a summary of the accounting treatment for trades typically executed and based on agreed upon discussions with Accounting & Finance. The Director PMO, Change Managment, and Compliance reviews the accounting method to ensure accuracy. (DER 1).** This request by the trader in Allegro should not be confused with the final accounting designation determined by the finance department derivatives accounting expert.If the accounting treatment is not listed on the Accounting Treatment matrix, the accounting treatment will be discussed and reviewed with Accounting & Finance prior to the execution of the trade.

Allegro will not allow trade entry with an invalid counterparty (an active counterparty must first be entered into Allegro’s counterparty listing). Counterparties are entered by the Back Office and Credit is applied by Treasury. Proper segregation of duties are in place as the Treasurer has management control over heating oil based hedge execution and credit counterparty setup. Traders can execute trades; however they cannot set up a new counterparty.

Once the trade is entered in Allegro and in the correct book, the trader creates a transaction ticket out of Allegro (a pdf document created with a Crystal Report) which details all pertinent information for the trade. The traders use Microsoft Outlook to distribute the transaction ticket to individuals on the Trade Ticket email distribution group. The predefined distribution list includes the Back Office Administration Manager (BOM), the Transportation Department, the Risk Control Department, Accounting, and all sales personnel. For each trade, Accounting reviews the accounting treatment listed on the transaction ticket or in the monthly download of transactions provided by middle office.

Physical Trades (excludes financial trades) are entered into RMS by the BOM and sent to Transportation to be added to the STP.

If the trader enters into a coal hedge trade that qualifies for hedge accounting, then FASB 133 hedge documentation is completed by the Director PMO, Change Management and Compliance under the guidelines specified by the Finance department hedge accounting expert. The documentation is given to the BOM to attach to the trade in Allegro. There are some cases in which the accounting treatment is too complex for Allegro and must be manually accounted for (D-Designation & Re-designation). **Accounting & Finance evaluate the effectiveness of the initial documentation supporting the transaction's qualification for hedge accounting. (DER 2).**

**Verifying Accuracy of Allegro**

The BOM is responsible for verifying the accuracy of the trade position details recorded in Allegro to the broker or exchange "confirmations" daily. A confirmation can be a documented provided to ACI by the exchange or broker (counterparty confirmation), an Arch generated confirmation provided to the counterparty, or viewing of the prior day activity on the specific exchange website. As noted earlier, all counterparties are vetted and approved prior to their inclusion in Allegro.

The confirmation review assures each trade has a written agreement defining negotiated terms, conditions, and commodity requirements. Each day, the BOM receives all transaction tickets from the prior day created by the Traders, all broker confirmations (except heating oil which are received and processed by the Assistant Controller), and verifies the data input into Allegro is accurate. If differences are identified, they are investigated by the BOM and others, as required.

*OTC Trades*

Arch generates a confirmation from Allegro which is eventually sent to the counterparty. Counterparties with Arch that have a Master Coal Purchase and Sales Agreement (MPSA) will receive a confirmation without additional Terms and Conditions (T&C’s) attached, Counterparties without an MPSA receive a copy of Arch’s standard T&C with the confirmation; however, some counterparties prefer to utilize confirmations and T&Cs from their companies.

When a third party T&C is used, AER and the Arch Legal Department, review and modify the third party's document, when necessary, prior to execution. Heating oil hedges are confirmed by the Assistant Controller instead of the BOM.

In cases where the counterparty uses their confirmation, the Back Office receives the counterparty confirmation, which is already signed. It is sent to the trader and then the President Arch Energy Resources for approval. The executed confirmation is returned to the BOM who emails it to the counterparty. All fully executed confirmations are filed in the trade folder along with the transaction ticket and broker confirmation.

The confirmation, whichever version applies, is checked for accuracy, initialed by the BOM and sent to the trader for approval. After the trader initials the confirmation, it is routed to the President Arch Energy Resources for signature and is then returned to the back office. The back office forwards the signed confirmation to the appropriate counterparty by the following business day.

**The Back Office ensures transaction confirmations are issued, receipt of counterparty confirmations are acknowledged, and transaction details from the confirmations are verified to the information in Allegro. On a daily basis, all positions entered into during the day are posted to Allegro by the end of the Arch business day. The next Arch business day, the BOM or assigned designee reconciles Allegro to the received counterparty confirmations. If no confirmation is received, the BOM will review the detail from the exchange website in order to ensure all positions have been accurately recorded in Allegro. Once the individual positions have been confirmed as accurate, the BOM acknowledges the review by marking the position as “Trade Confirmed” in Allegro. If differences are identified, they are investigated by the BOM and others, as required, prior to marking the position as “Trade Confirmed”. (DER 3).**

*Cleared Transactions*

Financial Swaps and Options are cleared through either FC Stone, or ADM. These exchange member brokers are also listed as the Counterparty within the Allegro system for those positions. Any cleared contracts through the exchange do not require confirmation beyond the broker statements. Arch receives these statements via the ArchCoalDesk central inbox or directly from the exchanges' position reporting systems. Cleared transactions are verified by the BOM each day to ensure all transactions conducted through an Exchange, or originated through a Broker, are represented accurately in Allegro. Any discrepancies shall be communicated, in writing, to the Front, Middle and Back office for correction no later than the end of the business day following the day of the transaction. A clear delineation of who is responsible for next steps on each discrepancy will be documented in this email thread, which may include formal rejection to the email originator.

All executed agreements (MPSA’s, T&C’s, and counterparty T&C’s) are scanned and kept on the network drive.

The “Trade Confirmed” flag indicates both the successful review of the position and “locks” the position details in Allegro. Once locked, Allegro does not allow for edits to the position details.

The Risk Management group reconciles open positions; open positions are any position or transaction that has not been settled/closed or expired in the current period. (See **DER 4** for settled/closed/expired position reconciliation process).

The reconciliation identifies any tonnage differences between the Allegro recorded tons and the period end tonnages provided on the exchange broker’s period end statements. It would also identify any positions not documented in Allegro and not identified through the established review process (See **DER 3**).

**On a monthly basis, a reconciliation between the end of period open position Allegro tonnage and the current period ending tonnage totals, obtained from the exchange partner statement, is verified by Middle Office. If volumetric positions do not match once a month, Middle Office notifies Front and Back Office and heads a formal investigation. DER 8**

Periodically, the Director PMO, Change Management and Compliance or the Vice President Risk Control reviews for any Allegro trades not locked and assigns someone to investigate all unlocked trades. *[Operational Note: In addition, the Senior Vice President Metallurgical/International Thermal & Senior Vice President Domestic Thermal will review the terms and conditions of the first confirmation from a new counterparty, or changes to the terms and conditions of an existing counterparty confirmation to ensure accuracy**(informal review).]*

For physical coal purchase transactions, the BOM receives an invoice from the counterparties. The BOM recalculates the amounts stated on the invoice based on the analysis from RMS and various reports from the Transportation department that indicate the quality and amount of coal received at the respective location. The back office verifies the accuracy of invoices prior to payment. For book-outs, the invoice is agreed to the book-out spreadsheet and approved prior to issuance. Vice President Risk Control verifies the reasonableness of margin calls. The BOM attaches the recalculation sheet and quantity/quality report to the invoice and signs the invoice as evidence of the recalculation. The invoice and support are sent to the Senior Vice President Metallurgical/International Thermal or the Senior Vice President Domestic Thermal, for approval. *Payments follow the standard corporate AP process; see Procure-to-Pay narrative for process.*

For physical coal sale transactions, billings are performed through RMS in the same manner as regular sales of coal. *See the Contract-to-Cash narrative for more information.*

Billings for financial transactions directly with counterparties (non-brokered transaction) are handled manually by the Accounting department.

**Generating Reports**

When a trade has been performed and entered into Allegro, the Director PMO, Change Management and Compliance receives the email notification from the Traders that includes the transaction ticket. The Director PMO, Change Management and Compliance is responsible for assigning of the Accounting department rules for hedge documentation**.** The Director PMO, Change Management and Compliance in conjunction with accounting ensures that transactions have been properly designated as to their accounting treatment (e.g.; MTM P&L, MTM OCI, normal purchase & sale).

There have been a few rare occurrences where the Director PMO, Change Management and Compliance will detect the requested accounting treatment for the trade was not approved. When this happens, the Director PMO, Change Management and Compliance notifies the Traders to let them know that a change needs to be made. The Traders will correct the accounting treatment field and confirm the change has been made.

In addition to checking the accounting treatment per trade, the Director PMO, Change Management and Compliance also scans the new trade information to check for incomplete fields. If any of the fields in Allegro are not filled in, then the BOM will not be able to print out a complete confirmation. For hedge transactions, an Allegro report/email is generated if the transaction is coded as a hedge and does not have hedge documentation attached in Allegro.

Each morning, the Director PMO, Change Management and Compliance will print out the “New Transaction Report” for the trades that were executed in the prior day, sorted by trader.The report is physically given to the trader for his review and signature. The trader is then responsible for submitting the report to the President Arch Energy Resources, who reviews and signs off on the transactions indicating approval. Daily, all new trades are reported in the risk report and any transactions which exceed durable authorization will be documented either on the New Transaction Report or via an electronic document. The manual New Transaction Report is routed to the transactor and the person who delegated the authority to approve transaction.

The Director PMO, Change Management and Compliance (backed up by the Middle Office Head (MOH) reviews and approves interest rates used in the valuation of the trades calculated by Allegro**.**

Position violations are presented in the daily risk report and further discussed in M&T Risk Committee meetings. Once all of the prices have been imported into Allegro, the Director PMO, Change Management and Compliance will examine the prices to see if there any missing data (zeroes in the pricing field) or if there any unusual fluctuations in prices from day to day. Daily, Allegro automatically calculates the fair value of trades based on prices imported from LIM.This information is used for bench marking prices, as an additional data point for management and the trader to consider. The Vice President Risk Control reviews third party pricing for reasonableness.

LIM is a pricing aggregation service purchased by Morningstar. LIM collects pricing from various exchanges, brokers, publications and provides a single source for users to pull pricing detail.

On a monthly basis, the Director PMO, Change Management and Compliance reconciles the FC Stone and ADM statements to Allegro and provides to Accounting. In addition, the following reports are utilized by accounting for entry into the general ledger:

1. “All Executions” file which is used to prepare the monthly mark-to-market (MTM) entries for the month,
2. “Settlement Option and Swaps” which provides the information need to record financial settlements on option and swap positions,
3. “FC Stone, or ADM and Premium Reconciliation” which provides the information needed to record the monthly transaction fees and any premiums paid through the FC Stone margin account, and last, and
4. “Settlements” file which is used to ensure that all non-financial settlements have been recorded.

These reports are generated out of Allegro or Business Objects and exported into excel.

**On a monthly basis, the Director PMO, Change Managment, and Compliance reconciles the expired and completed positions for the month per the Allegro "All Executions" and Allegro "Settlement - Options Swaps" to the exchange statements to validate the accuracy of the prices and volumes reported to the Accounting and Finance Departments. Any identified differences are provided to Accounting and Finance and are followed up prior to the close of the next period. Any differences with an aggregate total exceeding $50,000 are investigated in the current period. (DER 4).**

All Purchase and Sale (P&S) discrepancies will be emailed to the Front Office, Back Office, Finance and Accounting. The P&S process is the review and reconciliation of closed positions between Allegro and the exchange broker statements.

The completed reconciliation is provided to Accounting and Finance for review and the completion of any required journal entries. The initiation of an investigation for differences of less than the $50,000 threshold may occur at the request of any of the groups emailed (see above). The listing of differences are provided to Accounting and Finance for inclusion in financial reports and listed on the un-reconcilable differences line. Differences less than the threshold can be investigated during the next month in order to not impact the timing of the close process and still clear the items as they are identified.

**Monthly, the Manager Sales Accounting or qualified accounting designee performs and the Vice President & Chief Accounting Officer reviews the reconciliation of derivatives from Allegro to the Oracle GL. During the reconciliation process, the Vice President & Chief Accounting Officer's review includes: review of raw Allegro data to ensure settled, hypothetical and intercompany trades are appropriately excluded from the population, reconciliation of month end risk report provided by AER to the general ledger, etc. Note the reconciliation is included with the JE documentation submitted to the Vice President & Chief Accounting Officer. (DER 6).**

The “Settlements” file as well as a special ‘Simpson’ report on bookouts and settlements, is used as the basis for the Controller’s reclassification entry at month end from revenue and cost of goods sold to the proper classification on the income statement, capturing the P&L from derivatives.

*[Operational Note: Allegro is tested for new types of transactions to ensure accuracy of reporting. In addition, Mark to Market vs. Mark to Model comparisons are also performed monthly.*

*Regression and other statistical calculations are prepared by the MOH and utilized for informational purposes by the Director of Finance.]*

**Recording Transactions to the General Ledger (Derivatives)**

Monthly the Manager Sales Accounting is responsible for making the proper accounting adjustments and entries in the general ledger to reflect Arch Energy Resources (AER) trading and other derivative activity.

The Manager Sales Accounting records the mark-to-market adjustment for derivative instruments as required per ASC Issue #815, *Accounting for Derivative Instruments and Hedging Activities.* In order to determine the amount of the adjustment, Accounting obtains the following information for the various types of derivatives:

1. *Diesel fuel hedges* - The counterparty sends a statement each month that details the market value of each instrument. A complete list of open positions along with a copy of the contract with the counterparty is maintained by the Assistant Controller. See Heating Oil Section of narrative below.
2. *Coal, Natural Gas (NG), and Transportation Derivatives* - The derivatives are marked to market on a monthly basis using a discounted cash flow basis for swaps and forwards and marked to model Black-Scholes for options. Market prices for outright forward curves are gathered by using the LIM pricing tool.

The Director PMO, Change Management and Compliance, supplies the Controller or designee with the “1.AllExecutions-mmmYYYY.xls” file, which is the *Combined P&L* Business Objects (BO) report extracted to Excel. The spreadsheet includes a data dump from the Allegro system providing the information needed to make the necessary journal entries reflecting monthly coal and SO2 derivative activity. The journal entries are made in Oracle GL, ACI’s general ledger system application. The Vice President & Chief Accounting Officer or qualified accounting designee signs off on each report to indicate his review and approval of all derivative journal entries. *See FSCP narrative for journal entry, accrual, and reconciliation processes.*

In addition to the monthly reports, the Controller or qualified accounting designee receives the daily emails from the Traders with the transaction tickets attached.

The Controller or qualified accounting designee prepares reconciliations for all of the accounts that are affected throughout the monthly closing of AER books and a report summarizing the MTM adjustments.

**All Division Accountants use a closing checklist, tailored to each organization, to ensure completeness of the financial statement close process, which is designed to ensure complete and accurate financial statements. The Division Accountants denote their completion of the checklist items by inputting the Oracle GL ID# for each entry indicating the entry has been uploaded. (FSCP 3).**

**All Journal entries are reviewed by one of the following individuals: a qualified accounting designee, Assistant Controller, and or Vice President & Chief Accounting Officer. Evidence of journal entry includes journal entry form and supporting documentation. The review of entries retained with hardcopy is documented via signature on the printed journal entry form. For entries retained electronically, the review is documented with the reviewer's initials on each journal on the checklist. All reviews are completed prior to the next month's end. (FSCP 4).**

**Heating Oil**

The Trader executes trades for heating oil call options to hedge the purchase of diesel fuel for mines. The diesel fuel hedging strategy is determined by Senior Management and the Board. The strategy is implemented by the Director of Finance with the support of AER.

The Trader receives heating oil call option prices. If the prices are favorable, they will execute a trade with an approved counterparty (mostly banks and BP). After the trade is executed, trade tickets or alerts are sent via Allegro to a delegate(s) of the Accounting department, Treasury, and Risk Control. Trade details are recorded and aggregated in two separate spreadsheets - one maintained by the Trader and one maintained by the Assistant Controller.

Allegro is the official system of record for all heating oil hedges positions, but not MTM for accounting purposes. MTM from banks are used for accounting purposes. The trade details in Allegro are reviewed and locked upon receipt of the confirmation by the assistant controller; however, the Director PMO, Change Management and Compliance uses a spreadsheet to track trade settlement data. Forecast projections/exposure are updated on an as needed basis (at least quarterly) and delivered to most MTRC meetings.

The Assistant Controller is the “back office” for heating oil trades. The Assistant Controller’s spreadsheet is used to track the trade details for comparison to the broker/counterparty confirmation and for reconciliation to the broker statements at month-end.

**The Assistant Controller confirms the heating oil trade details provided by the Trader to the trade details outlined in the counterparty confirmation. If there are any discrepancies, The Assistant Controller will follow-up with the counterparty. If there are no discrepancies, the Back Office signs the confirmation and sends it back to the counterparty. The Assistant Controller reviews the heating oil spreadsheet routinely to ensure all trades are confirmed and are done so timely (1-3 days). (DER 5).**

Invoices for option premiums are received via email 2-3 days after the option is purchased. Prior to payment, the Senior Manager Treasury Operations reviews and approves the invoice. The Senior Manager Treasury Operations compares the details in the trade ticket against Allegro provided, including price and quantity, to the invoice and denotes the review with check marks next to the trade details. The invoice is provided to the Vice President & Chief Accounting Officer or Controller to sign-off on for payment authorization. Payments are made via wire transfer, as they must be received to the counterparty on the same day. *Payments follow the same process as indicated in the Procure-to-Pay narrative.*

Monthly, Arch receives counterparty settlement invoices for those options that have settled in the prior month. The Director PMO, Change Management and Compliance prepares a settlement calculation and sends the calculation to Assistant Controller. The Trader compares the settlement spreadsheet to the counterparty settlement statement to ensure accuracy. If options are in-the-money, the net settlement amount is a credit balance (balance owed by counterparty). *Cash receipts follow the same process as indicated in the Debt & Treasury narrative.* If the options are out of the money, net settlement amount is a zero balance.

Monthly, the Assistant Controller receives the counterparty statements directly from the counterparty. The statements include the current fair value of the open positions. She takes the MTM value (by trade and in total) from the counterparty statement and enters it into her spreadsheet. The counterparties calculate the mark to market figures based on the current/market price of heating oil at the time of the statement issued. The sum of the fair value for all trades is compared to the total fair value from each counterparty statement to ensure the value for all trade has been captured. The Assistant Controller records the adjusting journal entry in the general ledger to reflect the most recent fair value.

*Heating Oil Reconciliation*

**Monthly, the qualified accounting designee or Assistant Controller performs, and the Chief Accounting Officer reviews, the reconciliation of the heating oil spreadsheet to the third party statements and the reconciliation of premium payments per the spreadsheet to actual premium payments made by Treasury (AP Distribution Report). (DER 7).**