

# Case Study: Central Processing Facility & Gathering System

Expert analysis and opinions related to turnkey EPC facilities and changes in design basis





# Dispute

An overseas oil and gas producer selected a major international EPC contractor to engineer and construct a central processing facility in Africa. The EPC contractor based its lump sum bid on a third-party front end engineering design (FEED) and various technical specifications incorporated into the contract. After the EPC contract was awarded the owner and the contractor discussed various changes to the process design, including changes to feed gas composition entering the plant and increased plant capacity. Other potential changes were also discussed, including the following:

- Gas inlet flow increases and composition changes
- Changes to equipment design, including certain larger equipment
- Changes to pipe diameters to accommodate the increased flows
- Changes in materials of construction (e.g., stainless steel to carbon steel)
- P&ID changes
- Additional site work and plot plan changes
- Bulk quantity changes
- Equipment additions or deletions
- HazOp review design changes
- Material and equipment supplier changes
- Schedule impacts
- Value engineering options

The parties were unable to agree on a contract price and schedule adjustment, leading to a more than \$1 billion claim following mechanical completion. The EPC contractor claimed over 50 discrete changes increased project costs and delayed and disrupted the construction work. Arbitration was conducted in Paris, France, under the rules of the International Chamber of Commerce (ICC).

## PROJECT

350 MMSCFD Central Processing Facility & Gathering System

\$1.8B+ Total Project Cost

## PRIMARY ISSUES

Change Order Request Validity Assessment

Change Order Requests Quantification

Schedule Delays





# Approach

Interface was retained by counsel for the oil and gas producer to independently (1) analyze the engineering, procurement, and construction of the project; (2) assess and evaluate the validity of the claimed changes; (3) quantify the cost of any valid changes; (4) analyze the schedule to determine if the EPC contractor was entitled to a schedule extension for critical path delays; and (5) respond to the quantum and schedule delay reports submitted by the EPC contractor's experts.

## ENGINEERING CHANGE ANALYSIS

Interface conducted a deep-dive into the claimed engineering changes by analyzing the various FEED documents, including P&IDs, equipment designs, project specifications, and plot plans, and comparing them to the issue-for-construction (IFC) documents to identify and evaluate potentially valid changes. Interface then analyzed contractual entitlement for potentially valid changes, recognizing that the EPC contractor accepted certain risks under the contract which could potentially prevent recovery for increased costs and schedule extensions.

Many of the EPC contractor's claimed engineering changes were deemed to be invalid. However, Interface did conclude that some of them were valid under the contract. For the valid changes, Interface analyzed the quantum methodology and calculations of the EPC contractor and concluded that its methodology was flawed and inconsistent with the contractual unit rates. Interface reviewed the claimed manhours, equipment and material costs, and construction labor rates and concluded that the potentially valid changes were valued at significantly less than the \$1 billion claimed by the EPC contractor.



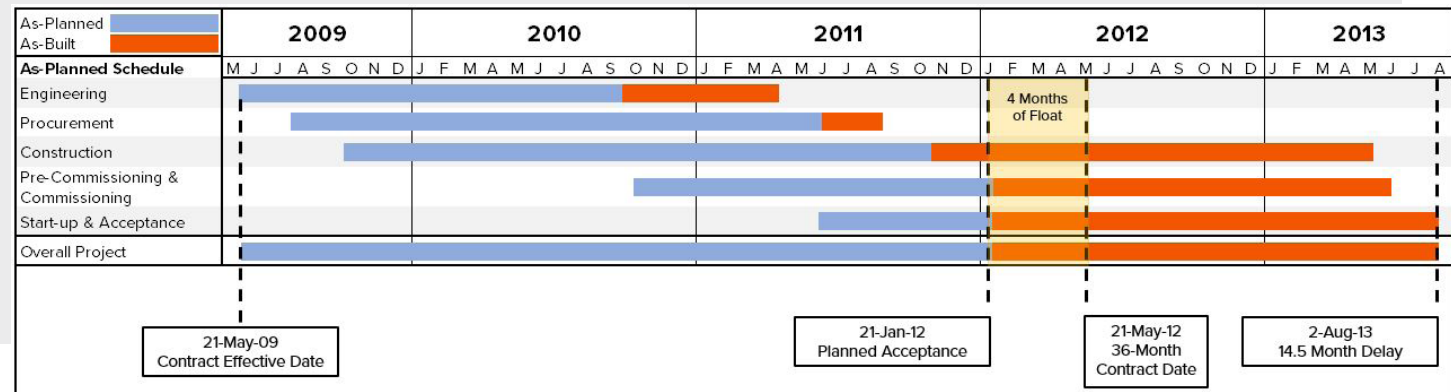
# Approach

## SCHEDULE DELAY ANALYSIS

Interface then analyzed the critical path schedules to identify any potential schedule delays associated with the valid changes. Several of the invalid changes and other contractor-caused delays were on the critical path, thus leading to concurrent delay on the part of the EPC contractor.

To assess the schedule delays, Interface forensically analyzed the EPC contractor's expert's report, assessed the delay associated with each disputed change, and performed a factual analysis of the project's critical path delays.

Using the available Primavera schedules in combination with the contemporaneous project documents, Interface identified the root causes for each of the delays and allocated the delay days to the parties.



# Outcome

Following issuance of Interface's initial quantum and schedule delay report, the EPC contractor's expert acknowledged various overpriced changes that Interface had identified and removed several hundred million dollars from its claimed amount.

Three of Interface's experts later testified in Paris, France, during the arbitration hearing. Interface testified that many of the alleged changes were invalid under the contract, and that the remaining valid changes were significantly over-priced. In addition, Interface testified that much of the claimed schedule delays were the result of the EPC contractor's concurrent delay issues. The case settled favorably for Interface's client following the hearing.

