

Pipelines and Terminals Case Studies

Case Study #1 (Scope Development, Portfolio Rationalization, Project Management, Cost Estimating)

Client had multiple facilities that required projects to be completed for expansion and regulatory reasons. TAS was engaged to develop project scopes and manage the engineering and construction contractors to assure projects were completed safely, consistent with business operability expectations, and per plan (cost and schedule). The project portfolio totaled \$9MM, including:

- Double bottom tanks
- Tank retrofits
- Epoxy coated tank bottoms
- New floating roofs
- Loading rack facilities
- Ethanol blending and off loading systems
- Additive injection and control facilities
- Red dye injection
- Vapor recovery units
- API separator design and installation
- Associated pumps, piping, controls, and automation equipment
- Tank containment study

Case Study #2 (Acquisition Integration, Operations, Business Strategy)

The client had acquired a small pipeline operation (~\$40MM) and needed to integrate it with their current operations. TAS's team developed a strategy and tactical plan for operational integration. TAS identified benchmark metrics and key performance indicators as well as risks to be managed, which resulted in the business operations being smoothly integrated. Following the integration, select TAS personnel participated in the operations of a Joint Venture asset on a transitional basis.

Case Study #3 (Early Stage Design, Project Readiness Review, Project Management)

Client wanted to construct a greenfield asphalt terminal (\$18MM). TAS's assignment was to develop an early stage design, validate it client experts, and act as owner/operator interface with engineering contractors and environmental groups to develop the project scope and execution plan. TAS completed project readiness evaluations to gauge ability to successfully move project forward. TAS was retained into the next phase to provide project management expertise; this resulted in tight control of scope and costs as well as assurance on project alignment at completion with the business case.

Case Study #4 (DRA Study, Performance Improvements, Cost Savings)

Client pipeline had been running prorated for a significant amount of time. TAS utilized a window of scheduled lower demand to perform a DRA study to identify a framework for operational efficiency and quantify the cost/benefit tradeoffs between electric horsepower and DRA alternatives. TAS then created an operations guidance model to minimize system operating costs at varying levels of flow rates. Client's use of the TAS model resulted in operating cost savings > \$80,000/yr.

Case Study #5 (Integrity Management, Asset Review, Risk Mitigation)

Client company had recently acquired a network of pipeline assets and needed a comprehensive review of cathodic protection systems for those assets. TAS reviewed data and analyzed design capabilities and identified gaps. TAS developed recommendations and a risk mitigation work plan, including use of a close interval survey on parts of the system.

Case Study #6 (Integrity Management and Preventative Maintenance)

Client pipeline had corrosion at various pump stations and needed a phased work plan to address in a sound and economical way. TAS surveyed the entire system using qualified inspectors to rank the levels of corrosion at the different sites. Site specific work plans were developed per the required work, ranging from no action or pressure wash to media blast to near white finish and full recoat. TAS developed a tiered 3-year maintenance cycle plan for the client to manage going forward.

Case Study #7 (Butane System Operational Improvement and Redesign)

Client's 3-sphere butane system lacked performance capabilities and loading/transfer flexibility to meet current operations needs. TAS engineered the resizing of pumps and piping configuration (along with foundation design, valves, actuators) to increase flow rates and effective capacity utilization as well as provide simultaneous loading/unloading and enhanced cross-tank transfer optionality. Project was delivered on-budget, ahead of operations requirements for butane blending season, and TAS managed all EPC related activities and oversaw process safety (PHA, PSSR) and start-up/commissioning.

Case Study #8 (Propylene Line Modifications, Integrity Management, Project Management)

Client engaged TAS to develop a solution to remove a stuck pig and redesign a propylene line service running between adjacent refinery and terminal facility, without taking the line out of service or impacting refining operations. TAS engineered work plans to install bypass lines and stopple the main line so that full flow rates were maintained while the impacted segment was safely cold cut and the pig removed. TAS designed new hot bend pipe configurations to eliminate miter bends and reduce the risk of future tools getting stuck. TAS provided EPC coordination and project management for all phases of the project through completion.

Case Study #9 (Pipe Bridge Redesign, Scope Development, Execution Plans, Project Management)

TAS provided technical consulting and project management services to client for a pipe bridge redesign to move 17 refined product lines above grade and complete tie-ins to support ongoing terminal operations. TAS coordinated work scope development, bid events, contract awards, field execution and sequencing of the tie-ins to ensure minimal downtime. TAS identified value engineering savings, which simplified the project scope and saved client ~\$500k.

Case Study #10 (Ground Stabilization, Pipeline Reinforcement, Scope Development, Field Execution)

Client terminal facility had experienced significant soil erosion and ground destabilization which raised the risk for a system breach and product release. TAS oversaw the completion of a geotechnical review, performed a root cause analysis on the soil fissures, designed and implemented a near term subsurface foundational support, soil stabilization plan and above-grade pipe reinforcement system. TAS completed all engineering design, work scope development, and field construction activities to resolve the issue.

Case Study #11 (Pipeline Cutouts, Engineering & Design, Permits & Approvals, Project Management)

Client had a prorated pipeline which required 7 cutouts (up to 200'-300') at 5 locations (2 railroad sites) and wanted to minimize revenue loss from lengthy/multiple shutdowns. TAS designed pipeline repair plans inclusive of engineered shoring, oversaw extensive permitting and approvals for rail entry, lane closures, and adjacent utilities, developed execution plans, coordinated scheduling and pre-work to compress downtime, and managed field work so project was completed within 6-day shutdown window.

Case Study #12 (Pipeline Repair, Environmental Approvals, Project Management)

Client needed to repair a pipeline segment located within a wetlands designated area in a previously contaminated Superfund site along a rail ROW. TAS provided project management (scope, schedule, budget), worked with subject matter experts to resolve wetlands assessment concerns and develop an environmental management site plan, coordinated rail and agency approvals, developed plans for wellpoint dewatering, and managed contractors / service providers to complete Black Diamond repair.

Case Study #13 (Block Valve Relocation and Automation, Wetlands Approval, Project Management)

Client wanted to relocate above grade and automate 2 block valves near a river crossing. Prior to TAS's engagement, project had been worked for 4 years and had become stalled. TAS provided technical consulting and project management services and oversaw successful execution within 18 months. TAS revised the required scope, coordinated EPC activities, worked with utility to get power to site, managed permitting (including US Army Corps approval), and oversaw resourcing for field completion.

Case Study #14 (Booster Pump Project, Engineering & Design, Field Execution, Project Management)

Client requested TAS's assistance to design and implement new booster pumps to improve operational capabilities at a terminal facility. TAS scoped the project, sized the required booster pumps, worked with equipment vendors to finalize pump specifications, redesigned the operational system P&ID and layout to provide jump over and bypass capabilities, managed the bid event and contractor selection process, oversaw field installation, and coordinated start-up commissioning with the operations team.

Case Study #15 (Pipeline Line Idlement Projects, Purge Planning and Execution)

TAS has managed multiple station and line idlement projects for clients, ranging from a 13-mile pipe segment / station in propane service to refined products lines, stations, breakout tanks, and ancillary equipment (e.g., custody transfer meters). TAS has developed purge plans and managed purging activities, coordinated with vendors and service providers to arrange flares, nitrogen, pigs, frac tanks, and vac trucks, worked with local operations personnel to plan, complete and oversee field activities.

Case Study #16 (Small Volume Prover Projects, Site Design, Owner/Operator's Representative)

TAS has managed a portfolio of small volume prover design and installation projects for a client, involving the procurement and installation of new provers at 5 stations. Client outsourced to TAS all engineering and design activities, including equipment specifications to meet operational requirements, facility layout, and piping modification and tie-ins. TAS's role included vendor selection, contractor selection, work scope development, management of equipment delivery as well as cost and schedule, and field oversight as owner/operator's rep for installation and commissioning.

Case Study #17 (Bio-Diesel Tank Project, Design & Layout, Permitting, Project Management)

Client needed to install additional bio-diesel tank capacity at a terminal location and engaged TAS to provide engineering, technical consulting, permitting, and project management services. TAS arranged for and reviewed geotechnical analysis, provided recommendations for tank siting and field execution, completed a hydraulic analysis, designed the foundation and piping for the tank, secured permits and fire marshal approval, and managed the overall project (equipment delivery, costs, schedule) to ensure on-spec, on-schedule, on-budget completion.

Case Study #18 (Crude System Cleaning, Repurposing Assets, Scope Development, Cost Estimate)

Client needed to repurpose previously contracted tank and pipeline assets at 2 stations (45,000 BBL, 3 tanks, ~10 miles of pipeline) from crude to refined products service. TAS completed a detailed site review, developed a modular work scope to encompass all of the tanks, pipelines, loading rack facilities, valves, meters, and ancillary equipment, specified a cleaning methodology to enable usage in ULSD service, oversaw the RFP process, developed cost estimates, and made contractor recommendations, resulting in timely completion of the project per client's expectations.