THE LIFE CYCLE OF AN OIL & GAS WELL
An Exploration and Production Project

PLANNING
+ Survey
  - Well Locations
  - Unitization Surveys
  - State Lease Nominations
  - Flowline Surveys
  - Magnetometer Surveys
  - Bathymetric Surveys
  - Aerial Base Maps
  - Routing and Planning
  - Base Maps
  - 3D Laser Scanning
  - SUE
  - Due Diligence for Lease Acquisition

+ Environmental
  - FAA Permitting
  - Wetlands / Coastal Permitting
  - Wetland Delineations
  - Oyster Assessments
  - Environmental Assessments / NEPA
  - Threatened and Endangered Species
  - Biological Assessment
  - Parish and County Approvals
  - State Highway Approvals
  - Air Permitting
  - Water Permitting
  - Due Diligence --> Phase I and II
  - Pre-drill Soil Sampling and Analysis
  - Due Diligence for Lease Acquisition

+ Engineering
  - Flood Elevation Certificates
  - No-Rise Certificates
  - Front End Engineering Design (FEED) Studies
  - Specification Development
  - Access Roadway Design
  - Civil Site Work
  - Drainage Systems
  - FEMA Floodplain Development Permits (FDP)
  - Due Diligence for Lease Acquisition

DRILLING
+ Survey
  - GPS Positioning
  - Drilling Permits and Compliance
  - Permit to Drill Oil and Gas Wells and Amendments
  - SUE
  - Due Diligence for Lease Acquisition

+ Environmental
  - Drilling Permits and Compliance
  - Permit to Drill Oil and Gas Wells and Amendments
  - Fresh Water Well and Frac Supply Well Permits
  - Work Permits (Oil, Gas and Injection Wells)
  - Texas Commission on Environmental Quality’s (TCEQ) Water Board Letter Requests
  - Drilling Rig Regulatory Plans (SPCC, Emergency, Coast Guard)

+ Environmental
  - Work Permits (Oil, Gas and Injection Wells)
  - Completion Packages (Oil, Gas and Injection Wells)
  - RRC and OOC Completion Forms

+ Environmental
  - Commingling and LACT Unit Permitting
  - TIER II Reporting
  - SPCC/ICP/USCG/EPA
  - Air Permitting and GHG Reporting
  - Saltwater Disposal Well Permitting
  - Work Permits (Oil, Gas & Injection Wells)
  - Allowables/Authority to Transport
  - (R-4)
  - Weekly Drilling Reports
  - Monthly Production Reporting
  - T-4 Pipeline Reporting

+ Electrical & Instrumentation Engineering
  - Cable Tray, Duct Bank, Wire-way and Conduit Systems
  - Control and Monitoring Systems (PLC, DCS, Remote I/O, etc.)
  - Grounding
  - Lighting Systems
  - Lightning Protection
  - Medium and Low Voltage Power Distribution
  - Security Systems, CCTV, Access Control
  - Control Logic
  - Instrument Loop Sheets
  - Instrument Plans
  - Panel / Rack Design
  - Systems Integration

COMPLETIONS
+ Survey
  - 3D Laser Scanning
  - Flowline Surveys
  - Subsidence Surveys
  - As-Built Surveys
  - Asset & Data Management
  - Base Maps
  - Unit Survey Plats
  - UAS Services

+ Environmental
  - Work Permits (Oil, Gas and Injection Wells)
  - Completion Packages (Oil, Gas and Injection Wells)
  - RRC and OOC Completion Forms

+ Engineering
  - Utility Line Engineering
  - Production Facilities Layout and Design
  - Equipment Sizing
  - Horizontal Directional Drilling (HDD)
  - Pump and Compressor Stations
  - Meter and Regulating Stations
  - Pig Launcher / Receiver Stations
  - Tank Storage Facilities
  - Vent / Flare Relief Systems
  - Process Flow Diagrams, P&IDs,
    - Isometrics, Plans & Elevations,
      - Alignment, Alignment Sheets, 3D Modeling
      - Specification Development
      - Piping Design Including Pipe Specifications, Supports, Valves, Insulation, Specialty Items
      - Piping Network Hydraulic Studies
      - Pipe Stress Analysis
      - Equipment Sizing and Specification
      - ASME Pressure Vessel Detailed Design and Analysis
      - Equipment Foundations
      - Pipe Racks and Supports
      - Equipment and Personal Platforms

PRODUCTION
+ Survey
  - Completions Well Bore Details-Used
    for Completions Planning Showing Perforation Points

+ Environmental
  - Work Permits (Oil, Gas and Injection Wells)
  - Completion Packages (Oil, Gas and Injection Wells)
  - RRC and OOC Completion Forms

+ Environmental
  - Commingling and LACT Unit Permitting
  - TIER II Reporting
  - SPCC/ICP/USCG/EPA
  - Air Permitting and GHG Reporting
  - Saltwater Disposal Well Permitting
  - Work Permits (Oil, Gas & Injection Wells)
  - Allowables/Authority to Transport
  - (R-4)
  - Weekly Drilling Reports
  - Monthly Production Reporting
  - T-4 Pipeline Reporting

+ Engineering
  - Cable Tray, Duct Bank, Wire-way and Conduit Systems
  - Control and Monitoring Systems (PLC, DCS, Remote I/O, etc.)
  - Grounding
  - Lighting Systems
  - Lightning Protection
  - Medium and Low Voltage Power Distribution
  - Security Systems, CCTV, Access Control
  - Control Logic
  - Instrument Loop Sheets
  - Instrument Plans
  - Panel / Rack Design
  - Systems Integration

ABANDONMENT
+ Survey
  - Site Clearance Applications and Verifications
  - Trawling and Sonar Surveys
  - Hazard Surveys
  - Positioning
  - Dive Vessel Support
  - Platform / Pipeline Removal Support

+ Environmental
  - Wetlands / Coastal Permitting
  - Wetland Delineations
  - Oyster Assessments
  - Environmental Assessments
  - Operational Assessments
  - Biological Assessment
  - Parish and County Approvals
  - State Highway Approvals
  - Phase I and II Due Diligence for Divestiture and Clean-up
  - Plug & Abandonment Packages (Oil, Gas and Injection Wells)