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1 INTRODUCTION

This document presents a summary of Project Management Methods used by DRL for Onshore Fast Track Projects.

DRL Engineering specializes in three core activities:
- Project Management
- Front End Engineering Development
- Benchmarking and Cost Reduction

DRL has operations in Houston, Malaysia and Singapore with some 45 core team members and several associate Sub-Contractor companies, as summarized in our website: www.drl-engineering.com

DRL Personnel originate from various Operating Companies of Gas Plants including DCP Midstream (the World’s largest NGL Producer with 66 Gas Plants), Hess, Mitchell Energy (a pioneer of cryogenic gas processing), Meridian Oil, Exxon, Shell, Enterprise, BHPB, Repsol, OPD, Hanover, and Engineering Manager GPS Inc, Dubai (numerous Gas NGL Extraction Plants).

DRL Engineering has conducted Owner Engineer (OE) and Owner Project Management (PM) including: compiling TIC Cost Estimates, Execution Planning, Scheduling, Engineering Reviews, Operability, Equipment FATs, Safety Reviews, QA/QC, Construction Management, Inspection, Mechanical Completion Methods, and Planning and Oversight of Safe Commissioning and completion of PSM.
Recent DRL Gas Plant Experience (in Gas Plant OE and Projects) have included:

- **DCP Midstream** (PM of 75 Projects over the past 5 years)
  - Eagleford Gas Plant Additions
  - Three Rivers Gas Plant Upgrades
  - NE Carthage Plant Upgrades
  - Goliad Gas Plant Upgrades
  - Giddings Gas Plant Upgrades
  - Gulf Plains Gas Plant Upgrades
  - Wilcox Gas Plant Upgrades
  - Springhill's Gas Plant Upgrades
  - Raywood Gas Plant Expansion

- **Hess Bakken Shale**:
  - Tioga Gas Plant Project (PM, CM, and Commissioning)
  - Hawkeye Gas Plant Project Management Team (PM and all leads)

- **Noble Energy**:
  - Leviathan Gas FPSO (2,000 MMSCFD) and FLNG lead positions in PM

- **Repsol ENI Cardon Venezuela** (4 x 300 MMSCFD JT Plants)
  - Offshore and Onshore PM from tendering to first gas
  - E&C Manager, Phase 1 PM (Valerus Gas Plant), MC Team, and Field PM Leader

Key Issues Relating to an EPC or Lease Build Own Operate (BOO) Contract for handling by a competent Owner PM Team are:

- Establish Progress Values of Credit to measure Schedule Progress, Criticality, and Ready for First Gas Dates
- Claims Control and Disputes
- Quality of Engineering, Equipment and Materials QA, MC Compliance, Code Compliance, and Documentation to suit Operator Maintenance MMS & MI.
- Technology Selection
- Safety in Design, Construction, and Operation
- Plant Reliability and Performance
Typical Issues justifying an experienced OE & PM Management of the EPC Contractor include:

- Definition of the Scope of Work (Specifications, Deliverables Definition and Clear Interfaces)
- Owner Data and Obligation Timelines are met (Site Preparations, Permits, Soils Data, Gas Fluid Variability, Invoice Handling, Response to Queries (TQs), extent of Owner Sign Off / Review / Info etc.), and impact on Claims.
- Assessment and Input to Contractor Planning and Critical Path Analysis, Resources, and Work Performance
- Internal Agreement on Fit for Purpose Specifications
- Fabrication Shop Oversight & Review (Skid Packages, Progress, and QA/QC)
- Construction QA per Code or Specification (Provides for Plant Durability and Maintainability)
- HSE Performance (i.e. Environmental Compliance Confirmation and Perimeter Security)
- Impact of Selection on Reliability and Accessibility on Equipment Skids
- Mechanical Completion Plan and Compliance (Records of all Shop and Site/Field Testing Procedures)
- Defined Production and Maintenance Reporting if Contract Operated

**Equipment Mounted on Earthen Pads versus Concrete Foundations**

*(Erosion, Stability and Durability)*
Poor Equipment Access versus Planned Layout (including skids)
Decreasing Trip Hazards and Increasing Accessibility

Understanding of Process and Safety Systems
Segregation of Control Systems and ESD Systems
Our “Project Program Management Services” and the associated approach, methods and commercial aspects, are described below:

2 PROJECT MANAGEMENT METHODS

Key aspects of managing projects need to achieve four key elements, namely: Planning, Organization, Direction and Control. These are summarized below:

**Typical Aspects of Program Management (PM)**

- **PLAN**
  - Alignment with Asset Owner on Project Program, Key Dates and Priorities
  - Master Level 1 Schedule - all Projects and Key Events
  - Project Schedules (Level 3) to set KO, FEL Milestones and AFE and RFSU Dates.

- **ORGANIZATION**
  - Team Organization (including Client integration), clear Roles & Resps.
  - Assign PM / CM or Proj Engr oversite of Eng or Field Contractors
  - Define Corporate Interfaces – incl. Operations, Procurement, Contracts..

- **DIRECTION**
  - Program Coordination Procedure (Comms, R&R, Files, Templates, Reporting etc.)
  - Project Document Management Procedure
  - Company Specifications & Procurement / Contracting Procedures and Proforma
  - Project Interface Procedure, QA and HSE Plans.
  - MOC - VOR, DCN, DDR QA & Change Procedures

- **CONTROL**
  - Weekly Progress Meetings & Action Registers.
  - Performance vs Work Packs or LS Contract
  - Weekly Schedule Update and Variance Report – what is late?
  - Field Supervision, Expediting, ITP and MC compliance

For assisting COMPANY to manage a Capital Project, we envisage and suggest the following initial typical activities and components:

- Provide PMT leader personnel as appropriate to represent and manage the job integrated with COMPANY, including PM leader, planner- cost controller, project engineer, p/t process lead, Site CM, QA leader (lead inspector) and document controller as the minimum core team. Procurement Buyer by CLIENT
- Non-disclosure / Contract agreement as appropriate
- Document Control procedure and file structure
- Team Roles and Organization
- Client Communication protocol
- Reporting requirements
- Orientation, Briefing and Introduction sessions
2.1 PLAN

Business Expectations: assimilate the business timing expectations for investment program in a simple Level 1 schedule including key event timings – such as plant outages, station start-ups (RFSU) etc. and associated summary business case or justifications.

Stage Gates: Adopt or apply with more rigor, the strategy to conduct projects in a systematic stage gate process – though smaller projects can quickly move thru the early Gates 1 and 2 below, with a simple PEP memo justifying the project and establishing an approved AFE budget.

A) STAGE GATES:

Example Stage Gate Definition:

Definition - Explain and define the level of definition, deliverables and activities required at each stage Gate by the respective sub-contractor, to avoid recycling, misunderstanding or gaps in the Mechanical Completion Program and Operations needs.

An example definition of stage gate deliverables and activities is as follows.
The below diagram clearly defines the specific deliverables and tasks that are typical of undertaking an onshore project.

Risk Assessments of the engineering and construction factors. As a group we will provide Risk Assessment and Mitigations based on the level of the project (as defined in the FEL stage gate process), summarized upfront in the PEP.

Constructability: Develop the Execution strategies to include contractor constructability. These will detail the “how and why” for execution which is at a deeper level than the FEL checklist.

Logistics – key aspect based on weather limitations as applicable.

Cost Control – create a sound Control Estimate, Values of Credit, associated WBS, and monitor the performance and highlight potential changes or adders and utilize our MOC-VOR.
B) PROJECT EXECUTION PLAN

These can be generic and simple for smaller jobs, or be customized for larger jobs. Key aspects of a PEP must include HOW you are going to do the job, Control Cost Estimate, contracting plan and basis (LS or T&M), sub-contractors, Safety Management, and ITP and MC Plan to achieve RFSU (Ready for Start Up). A typical PEP contents list is presented in the two slides below:
C) AFE ESTIMATING FOR APPROVALS

For T&M jobs, DRL utilize Work Pack Methods to estimate AND Control project Costs and measure progress, productivity, payments, claims and variances.

---

![AFE Estimating Chart](image-url)
The Work Breakdown Structure (WBS) needs to be a simple method to assign Costs (such as Work Packs) so as to permit tracking and trending during execution.

### 2.2 ORGANIZATION

This consists of the organization to administrate the project program, plus the resources to directly oversee the individual jobs. The minimum core team consists of PM Leader, planner-cost controller, project engineers, CM, QA leader and document controller.
2.3 DIRECTION

This element is where the PM and team must give clear directions to the Contractors thru the PEP, meetings, action register, communications, stated objectives etc.
A) FILE MANAGEMENT

To permit the fluent exchange of working files and easy access & viewing by team members and Client, DRL utilizes the BOX Cloud technology. DRL will set up a dedicated and customized folder structure for the program. All documentation shall be stored in this cloud based file structure. Client Team members will be provided access to BOX folders to facilitate easy exchange and viewing.
B) DOCUMENT CONTROL

DRL can provide or assist in a structured approach to DC, which can provide Client easy access or interfacing to HQ archives. Documents are to be labelled and archived in accordance with a consistent method, noting ant COMPANY PMS.

Example DRL Document Control Procedure:
C) PROCUREMENT PROCEDURES

DRL can provide, or assist in refinement of Procurement Procedures and Templates – as required, and / or provide buyer / expediting resource. Example DRL library includes:

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D) MECHANICAL COMPLETION

Consistent with the guidelines of API Recommended Practice 1FSC, DRL’s Mechanical Completion Team can assist the Client in the definition, development and implementation of processes, systems and procedures based on the Project organization to facilitate the achievement of Mechanical Completion (MC) and handover of the facility for commissioning and start-up. The diagram below provides an overview of the System Completion Work Process for a project:

The successful planning of these activities begins during the early stages of engineering of the project with implementation throughout procurement and construction culminating in the successful handover of the facility to the Commissioning Manager. Working with the Facility Commissioning Manager, DRL’s Mechanical Completion Team can assist the Client in establishing defined handover Systems & Sub-Systems based on sequential commissioning and start-up priorities as well as establishment of “Milestones” designed to coincide with the facility commissioning and start-up plan. DRL’s Mechanical Completion Team also assists the Client Quality Manager in defining the specific QA/QC records necessary to validate the achievement of Mechanical Completion based on approved Quality Inspection & Testing Plans.
An example of a Project MC Procedure Table of Contents is shown below:

![Table of Contents](image-url)

**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>INTRODUCTION</td>
</tr>
<tr>
<td>1.1</td>
<td>Purpose</td>
</tr>
<tr>
<td>1.2</td>
<td>Scope</td>
</tr>
<tr>
<td>1.3</td>
<td>References</td>
</tr>
<tr>
<td>1.4</td>
<td>Terminology</td>
</tr>
<tr>
<td>2.0</td>
<td>ROLES AND RESPONSIBILITIES</td>
</tr>
<tr>
<td>3.0</td>
<td>RISKS AND CONTROLS</td>
</tr>
<tr>
<td>4.0</td>
<td>SYSTEM DEFINITION AND PLANNING</td>
</tr>
<tr>
<td>4.1</td>
<td>System Definition</td>
</tr>
<tr>
<td>4.2</td>
<td>Turnover Sequence</td>
</tr>
<tr>
<td>4.3</td>
<td>System Completion – Split of Responsibilities</td>
</tr>
<tr>
<td>4.4</td>
<td>Vendor Support - Construction &amp; Commissioning</td>
</tr>
<tr>
<td>5.0</td>
<td>SYSTEM TURNOVER DATA</td>
</tr>
<tr>
<td>5.1</td>
<td>System Completion – System MC Dossiers</td>
</tr>
<tr>
<td>5.2</td>
<td>Contractor Final Handover Data Books</td>
</tr>
<tr>
<td>5.3</td>
<td>P&amp;ID &amp; SLD Master Red-line Data</td>
</tr>
<tr>
<td>5.4</td>
<td>Mechanical Completion Master Data System</td>
</tr>
<tr>
<td>6.0</td>
<td>SYSTEM TURNOVER WORK PROCESSES</td>
</tr>
<tr>
<td>6.1</td>
<td>Stages of Facility Completion</td>
</tr>
<tr>
<td>6.2</td>
<td>Mechanical Completions Work Process</td>
</tr>
<tr>
<td>6.3</td>
<td>Turnover Records Review and Management</td>
</tr>
<tr>
<td>7.0</td>
<td>RECORD OF REVISION</td>
</tr>
<tr>
<td>8.0</td>
<td>FORMS AND ATTACHMENTS</td>
</tr>
<tr>
<td>8.1</td>
<td>ATTACHMENT 1 - PLANT COMPLETION – SPLIT OF RESPONSIBILITIES (API 700)</td>
</tr>
<tr>
<td>8.2</td>
<td>ATTACHMENT 2 - STAGES OF FACILITY COMPLETION</td>
</tr>
</tbody>
</table>
Upon request of the Client, the allocation of a commercially available database system can be implemented to efficiently track and report the progress of the Mechanical Completion and Commissioning activities on the project. Examples of system/sub-system and milestone tracking for Mechanical Completion on a project utilizing a commercially available database system are provided below:
**E) PRE-COMMISSIONING AND COMMISSIONING**

DRL can assist Client in developing and implementing specific programs and procedures to ensure Contractors comply with their ITP plans and satisfy Mechanical completion approvals, thru to RFSU (Ready for Start Up) and Operations. DRL experience in Precomm/Comm of Rotating Equipment, Gas Plants, Power Generation, Gas Compression, Pipelines and Control Systems can assist in a streamlined approach to successful startup. DRL can supply Commissioning Leadership as well as Commissioning Technicians with backgrounds such as Process Engineering, Rotating Equipment, Instrumentation, Electrical and Control Systems Commissioning personnel.

This is an example of the development of a Commissioning Plan for one of DRL clients.

![Commissioning Plan Diagram](image-url)
The Commissioning Plan can also be tailored for smaller projects to ensure a safe and successful start of onshore facilities. This is an example of a large NGL Cryogenic Fractionator where DRL included Mechanical Integrity, Spare Parts Philosophy and Inventory, Maintenance Procedures and PSM Compliance.
DRL can provide specific commissioning procedures for equipment and training for Operations.

---

- Check the tank pressure; this will increase as the tank is being filled. If the pressure reaches 40 psig, make sure the PRV-7221-01 operates properly in venting gas to the flare.
- Check the level in tank while gravity filling other equipment in the system.

6.5.5. When the Therminol has been completely added to the system prepare the pumps as follows.

- Fully open suction valve in both pumps.
- Vent air / gasses trapped in the pumps, purging until liquid passes.

6.5.6. Put a pump in service following the manufacturer instructions. As soon as discharge valve is open, check the pump discharge pressure and tank level. It may be necessary to maintain the discharge valve slightly closed during the next steps to maintain stable operation of pump and to keep the tank level decreasing at a reasonable rate.

---

**CAUTION**

Check Expansion Tank level frequently – UJ-7220-01; DO NOT let a vacuum occur in the Expansion Tank.

6.5.7. The Therminol in the tank will be pumped to the system. Gasses in the piping and equipment will be displaced by the Therminol and air / gasses will bubble into the Expansion Tank. Complete the following steps to remove any gas being trapped.

- Vent trapped gas through the vents in the upper piping, equipment and expansion tank high points. Begin at the nearest high point on the pumps and continue following the oil flow.
- Vent trapped gas at highest point of Reboiler HA-004.
- Open FV-0404.

6.5.8. Check the oil level in the Expansion Tank; it must be at the optimal level at this time to allow enough space to expand when the Therminol temperature increases. It is also very important to maintain the proper tank volume because there will be Therminol loses during startup due to leaks and / or drains.

- If this level falls below the 70% level, recover.
- DO NOT overfill system. While warming the loop the oil will expand and could pass oil to the flare through the PRV-7221-01.
Proper handover both of equipment and documentation is important to successful startup. DRL can provide direction, procedures and manage this process on both small and large scale projects.
This diagram provides clear definition of the responsibilities of the Operator and Contractor.

Facilities Completion Management – & Hand Over to OPS

Operating Manuals and Mechanical Integrity
2.4 CONTROL

A) EXAMPLE REPORTING OF SERVICE CONTRACTS:

<table>
<thead>
<tr>
<th>DRL TEAM ACTIVITY</th>
<th>Manhours Expended</th>
<th>Application</th>
<th>Total for Week</th>
<th>Coded Weekly</th>
<th>Action Review</th>
<th>Action Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRL Engineering</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Technical Consultancy Services 2014 - 2017</td>
<td></td>
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</tr>
</tbody>
</table>

**B) SAMPLE FORMAT ACTION REGISTER**

<table>
<thead>
<tr>
<th>Action</th>
<th>Required</th>
<th>Date Action</th>
<th>Action Review Comments</th>
<th>Date Action Completed</th>
<th>Action Work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
### EXAMPLE WEEKLY REPORT FORMAT

#### FACILITIES WEEKLY STATUS REPORT

<table>
<thead>
<tr>
<th>Week Ending: 24-Jun-24</th>
<th>Page 1/1</th>
</tr>
</thead>
</table>

#### Project % Complete

<table>
<thead>
<tr>
<th>Offshore Contracts</th>
<th>Actual %</th>
<th>Plan %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipelines</td>
<td>31.2%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Platform</td>
<td>39.8%</td>
<td>60.0%</td>
</tr>
<tr>
<td>System Integration</td>
<td>45.9%</td>
<td>49.0%</td>
</tr>
<tr>
<td>Commissioning</td>
<td>9.5%</td>
<td>25.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Onshore Construction</th>
<th>Actual %</th>
<th>Plan %</th>
</tr>
</thead>
<tbody>
<tr>
<td>API E&amp;P</td>
<td>84.2%</td>
<td>100.0%</td>
</tr>
<tr>
<td>ARB Construction</td>
<td>3.6%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Onshore E&amp;P</td>
<td><strong>explained</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **API E&P**
  - **Phase 150 (FEED)**
    - 100.0% | 100.0% |
  - **Phase 150 R&P**
    - 14.3% | 14.9% |
  - **Skagway E&P**
    - 44.0% | 48.0% |
  - **BOP E&P**
    - 5.3% | 8.1% |

#### Project Health

<table>
<thead>
<tr>
<th>Current Issues / Risks (Important and High Priority Only)</th>
</tr>
</thead>
</table>

- **Onshore Pipeline:** Simple sample is in Valencia shop for welding qualifications. Other progress to finalize remaining pipeline bags - CV re-assigning designs to USA. Progress Mtn Day.

- **Skagway:** Good progress to finalize ONP 1/2 to BOP. Schedule shows manifolds shipping several weeks early.

- **Resources:** Re-assigning H/Y Vance desgnations to USA to improve progress. Ask engineer for hint!

#### Site Status

1. **Site Preparation - H. Martellis**

   **Accomplishments:**
   - Continue cleaning plants and applying the sealant on the evaporation pond and start to repair cracks in the plant.
   - Continue the survey of modified topographic areas.
   - Install sub bases on raw.
   - Construction of the sections of the main lift.
   - Concrete construction of the access roads, concrete for drainage channels, and catch basins.
   - Update the management of the drainage channels.

   **Activities Planned:**
   - Continue installation of steel and concrete works, concrete channels, and final documentation by end June 2024.
   - Issued the Scope Aiders Letter to DA. Finalized Portsmouth agreements agreed and issued by DA.
   - Estimated date of completion of roads and channels for drainage according to the schedule is indicating mid March 2024 - but are we only planning for the construction of drainage channels?
   - DA is pending to cover the punch of the BOP and the Aiders scope (new tank base area).

   **Areas of concern:**
   - Comply with HSE and environmental concerns, concrete channels, and final documentation.
   - Issued the Scope Aiders Letter to DA.
   - Finalized Portsmouth agreements agreed and issued by DA.
   - Estimated date of completion of the roads and channels for drainage according to the schedule is indicating mid March 2024 - but are we only planning for the construction of drainage channels?

   **Renewed plans need to accomplish the BOP and the Aiders scope (new tank base area).**
## Construction Daily Report

### Contractor

**Saftey Meeting**
- First Aid Cases: 0
- JSA Conducted: 0
- PTW Issued: 0
- HSE: 0
- PROGRESS: Actual: 0% Plan: 0%

**QUALITY**
- AFC Demolition: 0
- NCRs to Spec: 0
- HSE: 0
- RFI Issued: 0

### Contractor

**Engineering & Procurement**
- First Aid Cases: 0
- JSA Conducted: 0
- PTW Issued: 0
- HSE: 0
- PROGRESS: Actual: 0% Plan: 0%

**QUALITY**
- AFC Demolition: 0
- NCRs to Spec: 0
- HSE: 0
- RFI Issued: 0

### Contractor

**Rooftop**
- First Aid Cases: 0
- JSA Conducted: 0
- PTW Issued: 0
- HSE: 0
- PROGRESS: Actual: 0% Plan: 0%

**QUALITY**
- AFC Demolition: 0
- NCRs to Spec: 0
- HSE: 0
- RFI Issued: 0

### Issues & Concerns

- 

### MANPOWER

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Actual</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Management</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fabrication Inspection</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Signatures:**

Cardro IV Representative  
PRINT NAME  

**Photos**
E) COST CONTROL / SCHEDULE

Provision of Schedule Risk areas will be included with the schedule updates and analysis:

- Critical Path Analysis (TF<5 Days).
- Physical Progress Measurement, earned progress reporting process.
- Variance & Float Reporting as required
- Project S-Curves

Status Project S – Curve and Schedule Variance & Progress:
## F) WORK PACK REPORTING

Provide Historical Data through the Tracking of Contractor Man Hours, Materials, Equipment, and Consumables for Unit Rate and T&M Projects.

### WEEKLY WORKPACK CONSTRUCTION REPORT

<table>
<thead>
<tr>
<th>LABOR</th>
<th>POSITION</th>
<th>ST WT.</th>
<th>OT WT.</th>
<th>TOTAL WT.</th>
<th>VD.</th>
<th>WP-100</th>
<th>WP-200</th>
<th>WP-300</th>
<th>WP-400</th>
<th>WP-500</th>
<th>WP-600</th>
<th>WP-700</th>
<th>WP-800</th>
<th>WP-900</th>
<th>WP-1000</th>
<th>TOTAL (18)</th>
<th>DAILY LABOR COSTS</th>
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### WORKPACK STATUS SUMMARY REPORT

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>UNITS</th>
<th>DAILY RATE</th>
<th>DAILY COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

### MATERIALS:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>UNITS</th>
<th>QUANTITY OF MATERIAL</th>
</tr>
</thead>
<tbody>
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### EQUIPMENT:

<table>
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<th>DESCRIPTION</th>
<th>UNITS</th>
<th>DAILY RATE</th>
<th>DAILY COST</th>
<th>TOTAL COST</th>
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<tbody>
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<td></td>
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</table>
G) HEALTH, SAFETY, AND ENVIRONMENTAL

SAFETY MANAGEMENT PLAN

The Company and PM Team stress safety as one of their highest priorities. Company and PM Team expects the same dedication to safety from their independent contractors as from their own personnel.

The Contractor is expected to implement and enforce rules and practices necessary to eliminate accidents, injuries and unsafe acts and to actively promote a safe and healthful work environment.

The Contractor shall thoroughly familiarize itself and its employees with the Company operations at the jobsite, including operations that may pose a personnel hazard. The Contractor shall also thoroughly familiarize itself with the Company safety policies and procedures. Contractors shall be responsible for conducting a thorough examination of the jobsite premises prior to performing work and shall using its own special expertise and knowledge to ascertain that the premises are safe for the proposed work before commencing operations.

The purpose of the Project Safety Management plan is to ensure the roles and responsibilities for Contractor and Company personnel are clearly defined. This is to help ensure adherence to all applicable HS regulations, policies and management systems. This plan may also list those expectations not specifically captured by policy or regulation but are otherwise employed to achieve a high level of safety awareness and performance.

Health and Safety Company Expectations and Requirements:

- Incident Reporting Plans
- Safety Meetings (i.e. Daily Tail-Gate Meetings, Daily JSA’s, Safety Stand Down Meetings)
- Emergency Response Action Plans
- Personal Protective Equipment (PPE) Requirements
- Lifting/Rigging Procedures
- Fire Prevention Procedures
- Equipment Operation and Qualification
- Scaffold Construction and Inspection Procedures

ENVIRONMENTAL

The Project is to be executed in accordance with Company Environmental Site Plan and ensure Contractor and Supplier Systems satisfy emission limits as defined in the EP and applicable EPA and State Legislation. The most impactful emissions sources to air permitting thresholds from cryogenic gas
Plants are combustion emissions and gas treating emissions. Combustion emissions from inlet compression, propane refrigeration, and residue gas compression (assuming no electrical drivers) and hot oil heaters can greatly impact both criteria pollutant emissions and greenhouse gas emissions and are typically directly proportional to the nameplate capacity of the gas plant. Amine still over-head vent emissions of CO₂ can be equally and far more impactful, and is a function of the CO₂ contained in the gas stream, the volume of gas being treated combined with the CO₂ specification.

**DRL Engineering** can develop a permitting strategy that allows for timely authorization of the construction process and allows for operational flexibility once the plant commences operation.

Authorization for the construction and subsequent operation of a cryogenic gas plant in the state Texas can take many forms. These authorizations are issued by the Texas Commission on Environmental Quality (TCEQ) and may consist of a Permit by Rule (PBR) authorization (30 TAC 106.4 Including 30 TAC 106.352), Standard Permit for Oil and Gas Handling and Production Facilities (30 TAC 116.620), or a “case by case” New Source Review (NSR) Permit (30 TAC 116 Subchapter B). In some instances, two authorizations may be required depending on the plants status as a minor or major source. For example, a facility authorized by a PBR may need a Federal Operating Permit (Title V Permit) in addition to the PBR authorization as site wide emissions are within PBR thresholds but exceed Title V Thresholds.

Of the three types of authorizations, both the Standard Permit and the “case by case” NSR Permit are pre-construction permits and require approval by the TCEQ prior to the commencement of construction. A typical permit processing time for a Standard Oil & Gas Permit is up to 45 days. Turnaround time for the processing of a “case by case” NSR permit can range from 6 months to well over a year. If a facility qualifies for a PBR authorization, construction can commence once the PBR application has been completed, fees have been paid, and the application has been submitted online to the TCEQ via STEERS or placed in the mail.

The single most important factor in determining which authorization type any given cryogenic gas plant is able to obtain is directly proportional to the gas plants site-wide emissions (including maintenance, startup and shutdown emissions) or “potential to emit” (PTE). As a gas plants PTE increases so does the permitting complexity and lead time to obtain a permit.

PTE is defined by the TCEQ as follows: “The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design or configuration. Any certified registration or preconstruction authorization restricting emissions or any physical or operational limitation on the capacity of a stationary source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation is enforceable by the United States Environmental Protection Agency (EPA).”
Pollutants considered in the PTE determination include:

- Criteria Pollutants
  - Oxides of Nitrogen (NO\textsubscript{x})
  - Volatile Organic Compounds (VOC)
  - Sulfur Dioxide (SO\textsubscript{2})
  - Carbon Monoxide (CO)
  - Particulate Matter (PM\textsubscript{2.5}, PM\textsubscript{10})
  - Lead (Pb)
- Hazardous Air Pollutants (as related to the Oil and Gas Industry)
  - Benzene
  - Toluene
  - Ethyl benzene
  - Xylene(s) (o, m, & p)
  - N-Hexane
  - Ethylene glycol
  - Formaldehyde
  - Methanol
  - 2,2,4-Trimethylpentane
  - Carbon disulfide
  - Carbonyl sulfide
  - Naphthalene
- Greenhouse Gases (as related to the oil & gas industry)
  - Carbon dioxide (CO\textsubscript{2})
  - Methane (CH\textsubscript{4})
  - Nitrous Oxide (N\textsubscript{2}O)

Once the PTE for the gas plant has been determined, then an appropriate authorization mechanism can be determined by the thresholds listed in the table below:

<table>
<thead>
<tr>
<th>Air Pollutant</th>
<th>Permit by Rule tpy</th>
<th>Standard Oil &amp; Gas Permit tpy</th>
<th>Title V Major Source tpy</th>
<th>PSD Major Source tpy</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{x}</td>
<td>&lt;250</td>
<td>&lt;250</td>
<td>&gt;100</td>
<td>&gt;250</td>
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<tr>
<td>CO</td>
<td>&lt;250</td>
<td>&lt;250</td>
<td>&gt;100</td>
<td>&gt;250</td>
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<tr>
<td>VOC</td>
<td>&lt;25</td>
<td>&lt;250</td>
<td>&gt;100</td>
<td>&gt;250</td>
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<tr>
<td>SO\textsubscript{2}</td>
<td>&lt;25</td>
<td>&lt;250</td>
<td>&gt;100</td>
<td>&gt;250</td>
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<td>PM\textsubscript{10}</td>
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<td>&lt;250</td>
<td>&gt;100</td>
<td>&gt;250</td>
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<tr>
<td>GHG – CO\textsubscript{2}e</td>
<td>&lt;100,000</td>
<td>&lt;100,000</td>
<td>-</td>
<td>&gt;100,000</td>
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<tr>
<td>HAPs (combined)</td>
<td>&lt;25</td>
<td>-</td>
<td>&gt;25</td>
<td>-</td>
</tr>
<tr>
<td>HAPs (single)</td>
<td>&lt;10</td>
<td>-</td>
<td>&gt;10</td>
<td>-</td>
</tr>
<tr>
<td>Pre-Construction</td>
<td>No</td>
<td>Yes</td>
<td>PBR &amp; SP - No</td>
<td>Yes</td>
</tr>
<tr>
<td>Typical Application Turn-Around Time</td>
<td>NA</td>
<td>Up to 45 Days</td>
<td>Varies</td>
<td>6 month to &gt;1 Year</td>
</tr>
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</table>
H) QA REQUIREMENTS

The plant and equipment are to be purchased per AVL, in compliance with COMPANY Specifications, materials PML and RPs.

These specifications are incorporated into the project documentation, reviewed and issued in accordance with the project documentation control procedure. Key Deliverables are subject to COMPANY approval.

Equipment procurement will undergo an initial KO Meeting followed by a Fabrication KO meeting attended by Inspection. Vendor drawings are handled per the procedure and vendor drawing verification.

Piping systems per COMPANY B31.3 specification, hydro tested and 100% X-Ray in the shop. NDE will by the COMPANY approved RT companies. Field welds will be MP and 100% X-Ray. Full material traceability to be adhered to for all HC systems.

Foundations for compression per the COMPANY recommended grouting procedures.

The Construction QA Procedure and associated checklists and ITR Records to be proposed by the respective Contractor for COMPANY review and records incorporated into the Job Book Files.
I) MANAGEMENT OF CHANGE

The aim is to identify and make transparent changes (adder scopes or claims) early – such that management have the opportunity to challenge or consider alternates. This is a specific item on the Weekly Report summary.
J) SOFTWARE AND LICENCES AND TOOLS

Our Toolbox permits DRL to conduct selection QA of technical issues as requested or required.

<table>
<thead>
<tr>
<th>No</th>
<th>DESCRIPTION</th>
<th>CAPACITY</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Microsoft Project &amp; P6E</td>
<td>Project Planning and Control</td>
<td>OEM</td>
</tr>
<tr>
<td>2</td>
<td>Microsoft Windows XP Professional</td>
<td>Operating System</td>
<td>OEM</td>
</tr>
<tr>
<td>3</td>
<td>Microsoft Office Basic</td>
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<td>OEM</td>
</tr>
<tr>
<td>4</td>
<td>Adobe Professional</td>
<td>General</td>
<td>Permanent</td>
</tr>
<tr>
<td>5</td>
<td>Autodesk AutoCAD LT</td>
<td>Design &amp; Drafting</td>
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</tr>
<tr>
<td>6</td>
<td>Schlumberger Pipesim</td>
<td>Piping Engineering</td>
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<tr>
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<td>SPT Group OLGA</td>
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<tr>
<td>8</td>
<td>Dyadem PHA-PRO</td>
<td>Process Safety Engineering</td>
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<tr>
<td>9</td>
<td>Aspentech HYSYS</td>
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<td>11</td>
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<td>13</td>
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