

**PIPELINE OPERATIONS MANUAL** INCLUDING OPERATIONAL STANDARDS AND PROCEDURES

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**The Pipeline Operations Manual is a reference guide intended for use by pipeline maintenance crews, engineering staff and operations staff when planning or undertaking work which involves operations, repair and/or maintenance of company pipeline and facilities.**

This manual consists of eight sections:

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|--------------------------|-----------------------------------|
| 1. Overview              | 5. Routine Operations Procedures  |
| 2. Communications        | 6. Routine Maintenance Procedures |
| 3. Emergency Operations  | 7. Abnormal Operations Procedures |
| 4. Operational Standards | 8. Appendix                       |

Section	Section Title	Section Description
1	Overview	<ul style="list-style-type: none"> <li>The Control Center in any pipeline system is the nucleus of executive control for operations. In the Control Center, operators must learn and apply skills that ensure the safest, most efficient way of operating a liquid hydrocarbon pipeline system.</li> <li>This section begins with a system description of a typical Control Center, and concludes with a list of operator roles and responsibilities.</li> </ul>
2	Communication	<ul style="list-style-type: none"> <li>The ability to communicate effectively plays a central role in the ability of the operator to successfully perform his/her roles and responsibilities in the Control Center.</li> <li>This section begins with standards and procedures for communicating with field staff and/or outside agencies, and how to use a cellular phone or two-way radio while driving a vehicle.</li> </ul>

		<ul style="list-style-type: none"> <li>The appendix contains examples of internal and external pipeline and client contact phone lists as sources of reference.</li> </ul>
3	Emergency Operations	<ul style="list-style-type: none"> <li>The first responsibility of company personnel in the event of a reported emergency is to protect human life and the environment. A primary purpose of the ERP is to identify proper emergency notification procedures and responsibilities to ensure human life is protected and that potential impacts of the incident are controlled as effectively and as soon as possible. In addition, safety is paramount in all company operations, and employees are instructed to follow all established safety procedures.</li> </ul>
4	Operational Standards	<ul style="list-style-type: none"> <li>In the operations of the Control Center, there must be available a set of operational standards. These criteria provide the basis for performing all tasks related to the operation of the pipeline system from the perspective of the Control Center.</li> <li>Includes standards for startup and shutdown, steady state operation, minimum and maximum flows, operating limits and pump orders.</li> </ul>
5	Routine Operations Procedures	<ul style="list-style-type: none"> <li>The goal throughout any routine task is to make all operational changes in such a way that no large transients are created, minor transients are quickly managed, and the pipeline returns to steady state once the task is accomplished. Topics include: <ul style="list-style-type: none"> <li>Maintaining steady state operation</li> <li>Performing routine tasks</li> </ul> </li> <li>The correct execution of these tasks, therefore, must become second nature. Each routine procedure is followed by a discussion of the hydraulic and equipment considerations for that particular task.</li> </ul>

6	Routine Maintenance Procedures	<ul style="list-style-type: none"> <li>• This section of the manual presents the considerations for routine tasks during pipeline maintenance, including: <ul style="list-style-type: none"> <li>○ Pump unit selection</li> <li>○ Station bypass</li> <li>○ Station bypass for a pig run</li> <li>○ Welding</li> <li>○ Tightline operations</li> <li>○ Maximum flows for tanks fills</li> <li>○ Drainup</li> <li>○ Shutdown</li> <li>○ Operating pressures for a flowing pipeline</li> </ul> </li> </ul>
7	Abnormal Operations Procedures	<ul style="list-style-type: none"> <li>• As with any complex system, pipeline operating conditions are not always normal. A variety of upsets may occur, so the operator must be aware of how to manage these kinds of situations.</li> <li>• This section deals with operations procedures in the following areas: <ul style="list-style-type: none"> <li>○ Operating during a SCADA/communications loss</li> <li>○ Operating during a scheduled total communication outage</li> <li>○ Operating without transmitter information</li> <li>○ Unbalanced line operations</li> <li>○ Responding to transients</li> <li>○ Operating during maintenance</li> <li>○ Responding to power outages</li> <li>○ Responding to unit and station lockouts/failures</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ Responding to unsafe pressure conditions</li> <li>○ Responding to valve closures</li> <li>○ Responding to leaks</li> </ul>
8	Appendix	<ul style="list-style-type: none"> <li>● Flow Diagrams</li> <li>● Pipeline Linefill</li> <li>● Pump Curves</li> <li>● System Curves</li> <li>● Route Sheets</li> <li>● Forms</li> <li>● Leak Trigger List</li> </ul>