

The concept of the phase plan is designed to aid in meeting all scheduled deadlines for equipment qualification and transportation. A time-line has been segmented into four different phases based on primary job requirements. Each phase will have a “Purpose”, “Scope”, and “Procedure”.



1. Well Conception / Assessment Phase

Purpose

The purpose the Well Design / Assessment Phase is to define the scope of services and components that may be necessary, select quality rankings, approve a base quality plan and assign Quality Plan roles and responsibilities.

Scope

The scope of this phase is to develop a comprehensive list of potential components and services that may be necessary to successfully complete the objectives of the project. It is not necessary to determine an exact load-out list but an initial general scope of services and products. Once a general scope is determined initial quality rankings must be assigned.

Another purpose of this phase is to deliver vendor assessment requirements for the auditing phase (Vendor Assessment / Tender / Procurement) of the project.

Procedure

Representatives from the planning, quality, and operations groups must determine and agree upon the range of services necessary to safely and effectively accomplish the project by:

- Establishing a general location in which the project must be performed
- Determining the potential hazardous environments that exist in and around that area
- Researching regulatory requirements
- Developing an attainable prudent list of goals
- Review the operating range of components and services
- Introduce the PPI Quality Management Plan
- Determine the initial Quality Management ranking of the potential components and services
- Establish a general time line for the acquisition process (i.e. manufacture, inspection and verification) for long and medium lead-time components such as wellheads, sub sea equipment, special casing, etc.
- Select a champion to initiate the process and track the progress of each component and service
- Foresee negative consequences (in procurement and operations) and determine contingency plans.

Quality Rankings (QR) – The quality ranking of a particular component will be based upon the following:

- The operating environment (corrosive, abrasive, high MW, ERW, high DLS, high flow...)
- Percent of capacity (tension, torque, pressure, temperature, collapse, burst...)
- Project risk (wellbore/production zone in jeopardy if failure occurs)
- Operating life (200 drilling hours, 25 years production life...)

- Operator quality assessment.

Drilling and Completion Quality Rankings

Quality Ranking	Operating Environment	Percent of Capacity	Project Technical Risk	Operating Life
QR 1	Standard	< 40%	Low	Short
QR 2	Moderate	40% to 70%	Medium	Standard
QR 3	Critical	> 70%	High	Long

see Introduction for additional details

High Profile Components (HPC)– It is not necessary that all components of the same equipment category have the same QR ranking. Certain HPCs may need additional qualification steps to prepare it for a crucial step in the well. For example: A mud that is not compatible with mud motor stators may force the mud motor qualification process to a QR3 ranking while everything else remains at a QR2 ranking.

Evaluate and Improve – The potential vendors should perform a self-evaluation to prepare themselves for 3rd party audits and evaluations, which will proceed in the next phase. This will allow them to resolve IRs, maintain/repair equipment, train personnel, and “gear up” for new service activity based on the potential needs addressed in the Well Conception / Assessment Phase.

Warning: Though not specified by the title of this section, some long-term qualification processes may need to initiate during this phase. For example, Wellheads commonly have a very long lead-time for manufacturing of a specialized unit. It may be necessary to start assessing wellhead companies as soon as possible so that one can be chosen to start the lengthy manufacturing process.



2. Vendor Assessment / Tender Phase

Purpose

The purpose the Vendor Assessment / Tender Phase is to define the capacity, capability, and availability of a vendor to provide services and components that may be necessary during the drilling and completion operations.

It is also necessary to introduce to the vendors the Quality Management Plan. A commitment to quality in this early stage will decrease the chance of unrealized expectations.

Scope

The scope of this phase is to develop a list of potential suppliers that will be available, capable, and willing to successfully complete the objectives of the project. It is not necessary to determine which vendor will provide each component but to develop a resource list of potential vendors that are able to provide services and products.

The final purpose of this phase is to develop a complete understanding of the equipment and services available for the Pre-well Operations / Design Phase.

Procedure

ASSESSMENT - Representatives from the planning, quality, and operations groups must determine and agree upon the list of qualified vendors, products, and services necessary to safely and effectively accomplish the project by:

- Vendor audits to determine
 - personnel, facility, and equipment capacity to provide, maintain, and service necessary equipment and services considering their current and future work-loads. (Do you have enough personnel and equipment to handle projected work loads?)
 - personnel, facility, and equipment capability to manufacture, assemble, maintain, test, repair, and/or inspect products and services necessary for potential drilling and completion operations. (Do your people have the expertise to handle potential products and services? Do you possess the qualified equipment to perform all processes necessary to support your product or service?)
 - documentation of manufacturing, testing, repairing, and inspecting procedures in accordance with API, operator, and PPI specifications (Do you have the assembly, maintenance, and inspection procedures and equipment specifications *with tolerances*? Are they available for quick and easy reference for assembly, maintenance, inspection, and 3rd party personnel?)
- Company evaluations to
 - review past performances and unresolved IRs (How many problems occurred in the past and were they cooperative in resolving past issues?)

- determine company structure and support services (Do they have technical support infrastructure to react in a time of urgency?)
- estimate industry stability (Will the company be in business when you need them?)

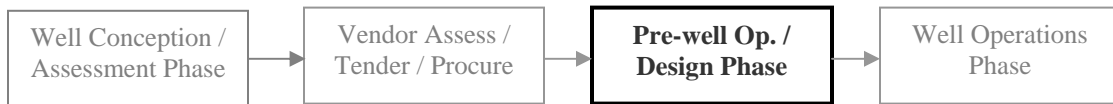
TENDER – Considering the “Quality” of the vendor determined through the “assessment phase”, bid evaluation and vendor selection can occur. Quality input should have a profound influence on vendor selection.

From the audits and evaluation procedures the quality group will be able to refine the qualified products and services available and thus be prepared to determine final well design. Qualified vendors need to be introduced to the PPI Qualification Plan, goals, expectations, and consequences. Vendor and operator roles and responsibilities should be defined to ease the flow of communication.

Evaluate and Improve – Following the detailed evaluation presented in this phase, the vendor should be present with a clear, detailed, and scheduled resolution process for each IR. The primary emphasis should be applied to resolution of “IRs” not blame or criticism. A “team” atmosphere is crucial to developing a constructive environment for vendor and operator. Additional contingency plans should be made based on vendor IR summaries. A definition and explanation for each of the levels are as follows:

IR Level	Definition	Explanation
1	Resolution by date	The improvement request must be resolved by a specified date for the vendor to be considered an approved vendor. The qualification process can continue while this request is being resolved.
2	Resolution prior to next activity	The improvement request must be resolved by the next service action. The current qualification process can proceed, however, the request should be resolved prior to the next qualification activity.
3	Immediate resolution	No quality service can or will be performed until this request is resolved. This will halt the current qualification process until a resolution can be found.

At this point it may be necessary to initiate weekly quality meetings to track project schedule, equipment time-lines, and IR resolutions.



3. Pre-well Operations / Design Phase

Purpose

The purpose the Pre-well Operations / Design Phase is to design the well with clear understanding of the available products and services. At this point you need to refine the scope of products and services, review the verification process of long-lead and medium-lead items (enact contingency plans if necessary and revise well plan to reflect same), and start the verification process of some initial short-lead products and services that will be needed at the start up of the well.

Scope

The scope of this phase is to design the well, check the progress of long-lead and medium-lead equipment, and initiate the verification process on start-up equipment and services.

Procedure

The Project Planning Group must deliver a revised well plan to reflect actual products and services currently available. Representatives from the planning, quality, and operations groups must determine:

- list of approved vendors (primary and secondary)
- an operation, product, and service time line
- a detailed inspection matrix
- required QA documentation (inspection, 3rd party QA, handling procedures, assembly procedures, operating procedures, equipment specifications, fishing diagrams...)
- refined roles and responsibilities of vendor and operating personnel
- develop “problem evaluation teams” and contingency plans
- goals and consequences

The time line must compensate for:

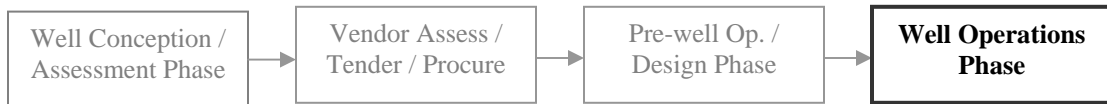
- Manufacturing time
- Inspection/Test/Verify time
- Repair time
- Vendors’, inspectors, machine shop, and 3rd party schedules
- Transportation time (land/air/sea)

Evaluate and Improve – A regularly scheduled quality meeting should be held from this point through the end of the project. The following is a minimum list of attendees:

- Planning Engineer
- Quality Manager
- Inspection companies representatives

- Product and service vendor representatives
- 3rd party QA representative
- Operation engineer

The purpose of this meeting is to refine time-line schedules, discuss new IRs, resolve old IRs, and discuss any issues that may pose a threat on delivering qualified equipment on time. Minutes from this meeting should be kept and regularly distributed to the attendees. The purpose of this effort is to keep everyone up-to-date with current operating changes, resolve issues before they affect time-line schedules, and improve individual vendor performance.



4. Well Operations Phase

Purpose

The purpose of the Well Operations Phase is to effectively meet and exceed all quality objectives, remain within budgeted constraints, incur zero equipment preventable downtime, and to continuously improve operation procedures, product quality, and service reliability.

Scope

The scope of this phase is to implement, sustain and improve on the plans necessary to ensure qualified equipment is used in a proficient manner.

Procedure

Representatives from the quality, and operations groups must maintain an open communication of time-line changes, operational changes, and potential contingency actions. In order to accomplish project goals we must maintain time lines, timely implement contingency plans to assure zero downtime, Verify all equipment, and use the equipment within a pre-determined set of operating parameters.

Evaluate and Improve – A regularly scheduled quality meeting should be held from this point through the end of the project. The following is a minimum list of attendees:

- Planning Engineer
- Quality Manager
- Inspection companies representatives
- Product and service vendor representatives
- 3rd party QA representative
- Operation engineer

The purpose of this meeting is to refine time-line schedules, discuss new IRs, resolve old IRs, and discuss any issues that may pose a threat on delivering qualified equipment on time. Minutes from this meeting should be kept and regularly distributed to the attendees. The purpose of this effort is to keep everyone up-to-date with current operating changes, resolve issues before they affect time-line schedules, and improve individual vendor performance.

The on-going resolution of IRs may have little effect on the current job. It will have a distinct effect on the beginning of the next well. If a well can end with good quality assurance then the next well should start with good quality assurance. This is a good reason to not “let your guard down” at the end of a well.

Critique the time line for use on your next well. It was probably continuously being adjusted to account for unforeseen schedule changes. Revise items that may have been rushed during this project.