

DEP SPECIFICATION

OFFSHORE COORDINATION TEAM MANAGEMENT AND CONSTRUCTION HOOK-UP WORK PLANNING

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1. INTRODUCTION

1.1 SCOPE

This new DEP specifies requirements and gives recommendations for the types of activities and deliverables required during the Select, Define and Execute Phases of a typical project for Offshore Coordination Team (OCT) formation and execution. This DEP, however, does apply and has been applied to both offshore and onshore construction locations.

The goals are the same: communicate, coordinate, and work together for 'best for project' to minimize critical path to first production/startup or whatever the project goal(s) may be. In addition, this DEP will provide guidance on how to effectively plan, estimate and execute an offshore hook-up (through mechanical completion), as part of offshore construction program.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

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This DEP is intended for use in facilities related to offshore oil and gas production. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases, the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.3.2 Specific definitions

Term	Definition
Brownfield	The execution of a project on a producing asset, including facility/field abandonments.
Commissioning and Startup (CSU)	The activities undertaken after precommissioning, and involve the dynamic testing of major subsystems or entire systems in accordance with design operating parameters and certified ready for startup and handover to Operating Unit. The startup mode commences with the introduction of well hydrocarbons into hydrocarbon bearing systems (subsea and/or host).
Greenfield	The execution of a project in an asset with no previous reserve production.
Host	The surface development system, such as a Tension Leg Platform (TLP), Floating Production System (FPS) moored platform, Spar moored platform or Floating Production, Storage and Offloading (FPSO) moored platform.
Mechanical Completion	The milestone that achieves physical completion, integrity testing, documentation and acceptance certification of mechanical, piping, electrical, instrumentation and control components systems for host and subsea systems. Such state of completion is certified "ready" for handover for commencement of pre-commissioning activities.
Pre-commissioning	The activities undertaken after mechanical completion, but prior to commissioning. Such includes functional (static) testing of system or subsystem equipment components, the introduction of fluids (no hydrocarbons) and partial energizing of systems, acceptance and certification in accordance with the design operating parameters and ready for commissioning and well startup operations.

1.3.3 Abbreviations

Term	Definition
FID	Final Investment Decision, which is a key decision gate in the ORP that allows a typical project to proceed into the execution phase.
HSSE	Health, safety, security, environment and social performance.
iPMS	The integrated Project Management System used as a front-end tool for project execution planning along the ORP.
MODU	Mobile Offshore Drilling Unit – typically a semi-submersible or drill ship used for well drilling and completions activities.
OCT	Offshore Coordination Team, whose key role is to develop and execute an integrated management framework related to the offshore installation and hook-up/completion work scope of the Project.
OCV	An Offshore Construction Vessel, either a derrick barge, anchor handling vessel, semi-submersible construction barge or large vessel using dynamic positioning for station keeping and general marine movement.
OIM	The Offshore Installation Manager.
ORP	Shell's Opportunity Realization Process.
SIMOPs	Simultaneous Operations in the field and/or on the host.

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section number is shown in brackets (). Other documents referenced by this DEP are listed in (6).

1.5 SUMMARY OF MAIN CHANGES

This is a new DEP.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be submitted to the Administrator using one of the following options:

Shell DEPs Online (Users with access to Shell DEPs Online)	Enter the Shell DEPs Online system at https://www.shelldeps.com Select a DEP and then go to the details screen for that DEP. Click on the "Give feedback" link, fill in the online form and submit.
DEP Feedback System (Users with access to Shell Wide Web)	Enter comments directly in the DEP Feedback System which is accessible from the Technical Standards Portal http://swwww.shell.com/standards . Select "Submit DEP Feedback", fill in the online form and submit.
DEP Standard Form (Other users)	Use DEP Standard Form 00.00.05.80-Gen. to record feedback and email the form to the Administrator at standards@shell.com .

Feedback that has been registered in the DEP Feedback System by using one of the above options will be reviewed by the DEP Custodian for potential improvements to the DEP.

2. PURPOSE

During the execution of the offshore installation and hook-up/completion work scope, the level of planning, coordinating, and controlling of work and resources and scheduling activities are significant and involve diverse workgroups. Proper execution will enable significant benefits in HSSE performance, first oil delivery, and project value. As shown in Table 2.1, several past complex Shell projects have utilized a management framework to successfully deliver these complex scopes of work. Many of these tools and processes that formed the management framework (Figure 2.1) were created during the earlier TLP programs, and were refined and improved over time to provide a guideline for the present “framework to operate”.

Table 2.1 Past project results

Project Name	Actual Results and Benefits
URSA Project	Enabled schedule to be maintained after wells were lost 4 months prior to start of Offshore Installation and Integration. Enabled success after shift of Integration of host from offshore GoM to near shore Curacao. Enabled achievement of targeted first oil date.
Brutus Project	Minimized impact of weather delays (Tropical Storm Allison). Enabled team to avoid potential 60 days of delay. Enabled first oil to be accelerated 27 days from base plan.
Holstein Project	OCT model was used by BP Holstein Project (Non-Shell Operated Venture). Enabled identification of key gaps in offshore work control enabling delivery of project to schedule.
Other Successful Applications	Na Kika FPS Project Bonga FPSO Recovery Project Mars TLP Hurricane Katrina Recovery Project Perdido Spar Project Shell Motiva Port Arthur Refinery Expansion Project Olympus TLP Project

This document collectively captures the key aspects and best practices from previous experience to successfully plan, execute and deliver “Greenfield” and “Brownfield” offshore and onshore installation and hook-up projects. Specifically, the Offshore Coordination Team concept and its management framework will be discussed in detail. The document applies to typical offshore surface development systems, such as a floating production, storage and offloading (FPSO) platform, semisubmersible floating production system (FPS), Spar or tension leg platform (TLP), but has also been applied to complex onshore construction.

At present, the emphasis of this document addresses the execution of a typical “Greenfield” development. The document will be updated at a later date to incorporate relative guidance and learnings for application in “Brownfield” and “Emergency” (e.g., Mars TLP Recovery) mode executions.

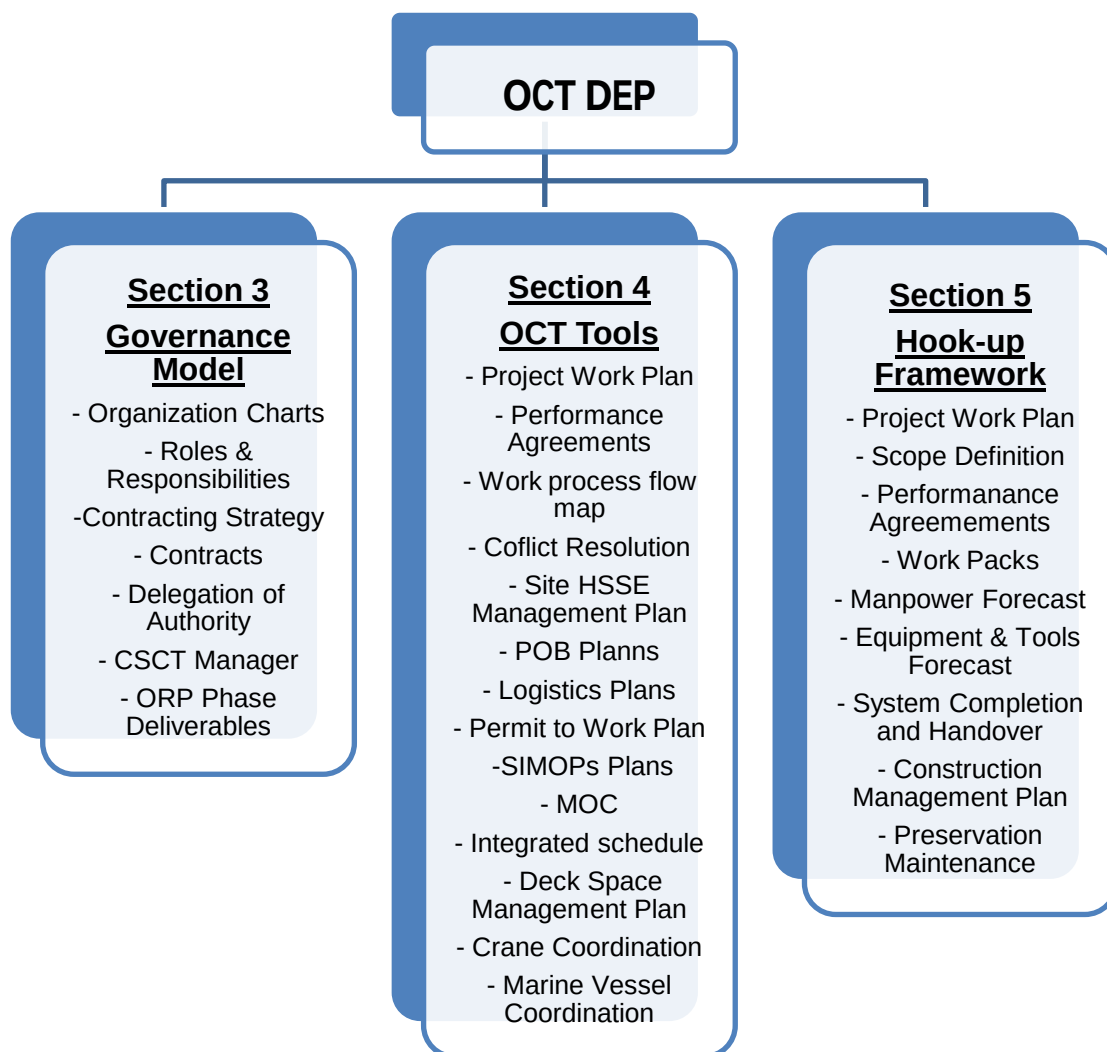
Table 2.2 describes what the major sections of the document specifically discuss:

Table 2.2 Overview of this document

Section	Describes
1 & 2	Introduction to the Offshore Coordination Team concept and purview.
3	Governance model with corresponding responsibilities and deliverables.
4	OCT project work planning during ORP Select through Execute Phases
5	Specific guidance to develop a “Host Hook-up” project work plan associated with the facility hook-up and subsequent handover to the Commissioning and Startup Team.

The details regarding the management framework for each discipline to execute their specific scope of work is not covered in this DEP. However, to provide some guidance as to the extent and level of planning required for the execution of a discipline's scope of work, a typical framework for the host hook-up scope is outlined in (5).

The following Figure 2.1 provides more detail on the document structure for (3), (4), and (5).

**Figure 2.1 OCT DEP document structure**

2.1 OFFSHORE COORDINATION TEAM PURVIEW

It is important to recognize the need to define the scope, properly estimate and schedule such work programs during Select Phase. Subsequently, the entire program can be planned and estimated to a much greater level of detail (Level three), with the key interface modes of the major host packages identified, planned, estimated and scheduled as an integrated program. After the project achieves FID, this document provides significant guidance on front-end planning, team governance and relationship formation, the offshore governance model and the development of the management system to be used through field production startup.

This document is intended to provide general guidance for the conceptual planning and estimating for the offshore campaign activities during the Opportunity Realization Process (ORP) Select and Define Phases and the detailed planning, organizing, scheduling, estimating and framing activities of the offshore installation and hook-up/completion program during ORP Execute Phase.

As described above, key activities of the OCT will be discussed in four OCT Phases below, aligned with the ORP:

- ORP System Select, Define Phases
 - o OCT Phase A – Front-end planning for offshore activities and plan integration
- ORP Execute Phase
 - o OCT Phase A (cont'd) – OCT Formation and completion of front-end planning
 - o OCT Phase B – Offshore activities up to Host moored and installed
 - o OCT Phase C – Host Hook-up and Pre-Commissioning of Hydrocarbon Systems
 - o OCT Phase D – Commissioning and Startup of Hydrocarbon Systems

Figure 2.2 depicts an overview of the key activities related to offshore planning and construction during pre and post-FID. The successful planning of an offshore program starts during the system selection phase and progresses with greater level of definition and planning required as the project matures in accordance with the ORP.

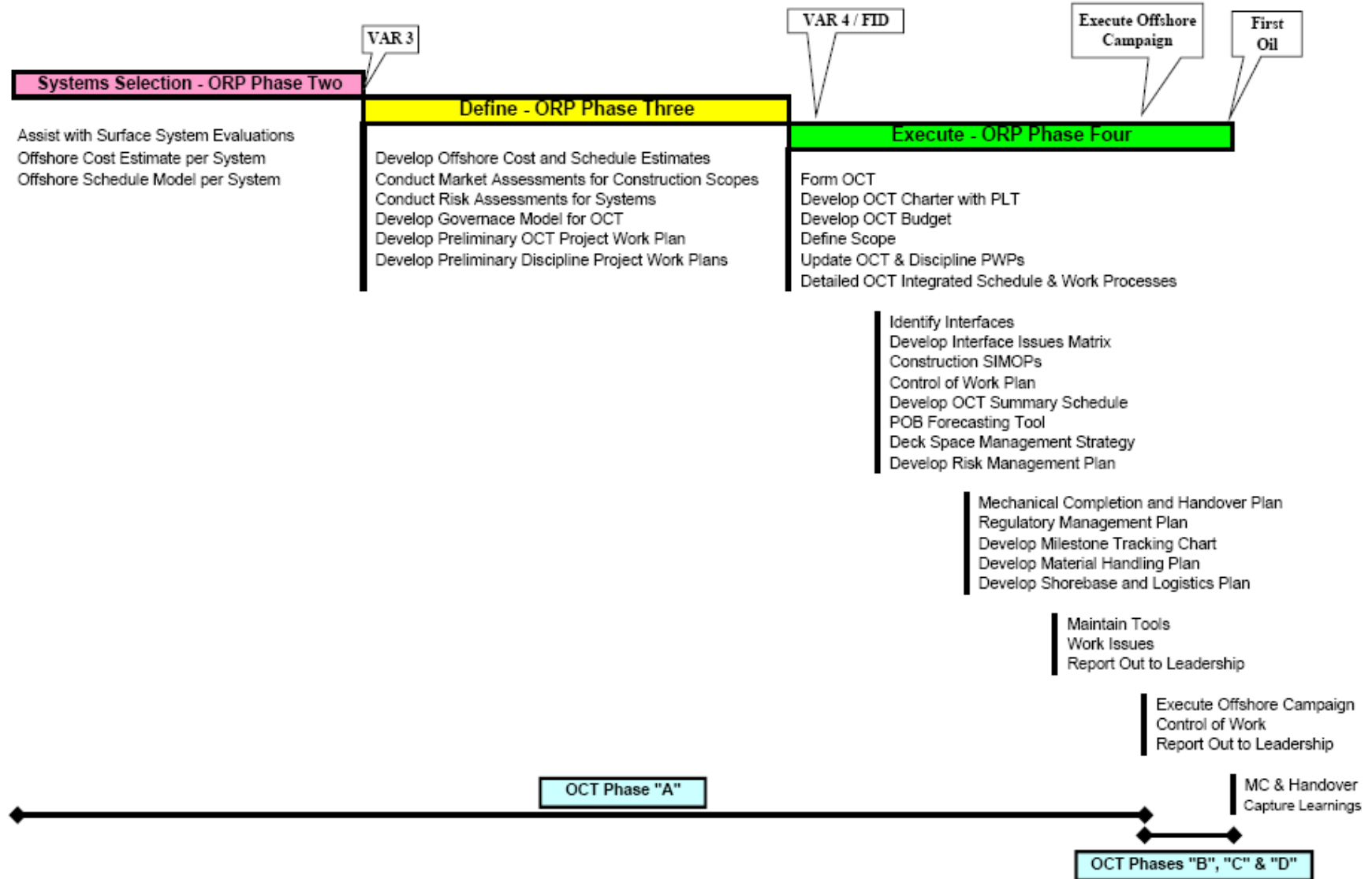


Figure 2.2 OCT planning and execute process overview

In contrast to the ORP phases, Figure 2.3 provides an illustrative timeline focusing on the offshore planning and field construction activities. Such activities managed by the OCT during ORP Assess, Select and Define Phases are influenced by the type of surface development system selected for the host.

The level of planning and coordination required for an offshore hook-up and commissioning program is extensive. For a spar development system, the hook-up and mechanical completion activities (OCT Phase C) to complete the integration of the host packages are far more complex and longer in duration than other host configurations. For a TLP, Semi or FPSO, the integration of the host packages are generally completed quayside, limiting the majority of offshore hook-up and commissioning program to final integration of the subsea system with the host.

The complexity, management framework, governance model and personnel required to successfully deliver the offshore program shall be taken into consideration and framed as early as the ORP Select Phase. This is outlined in greater detail with an OCT as the project matures into the ORPs Execute Phase.

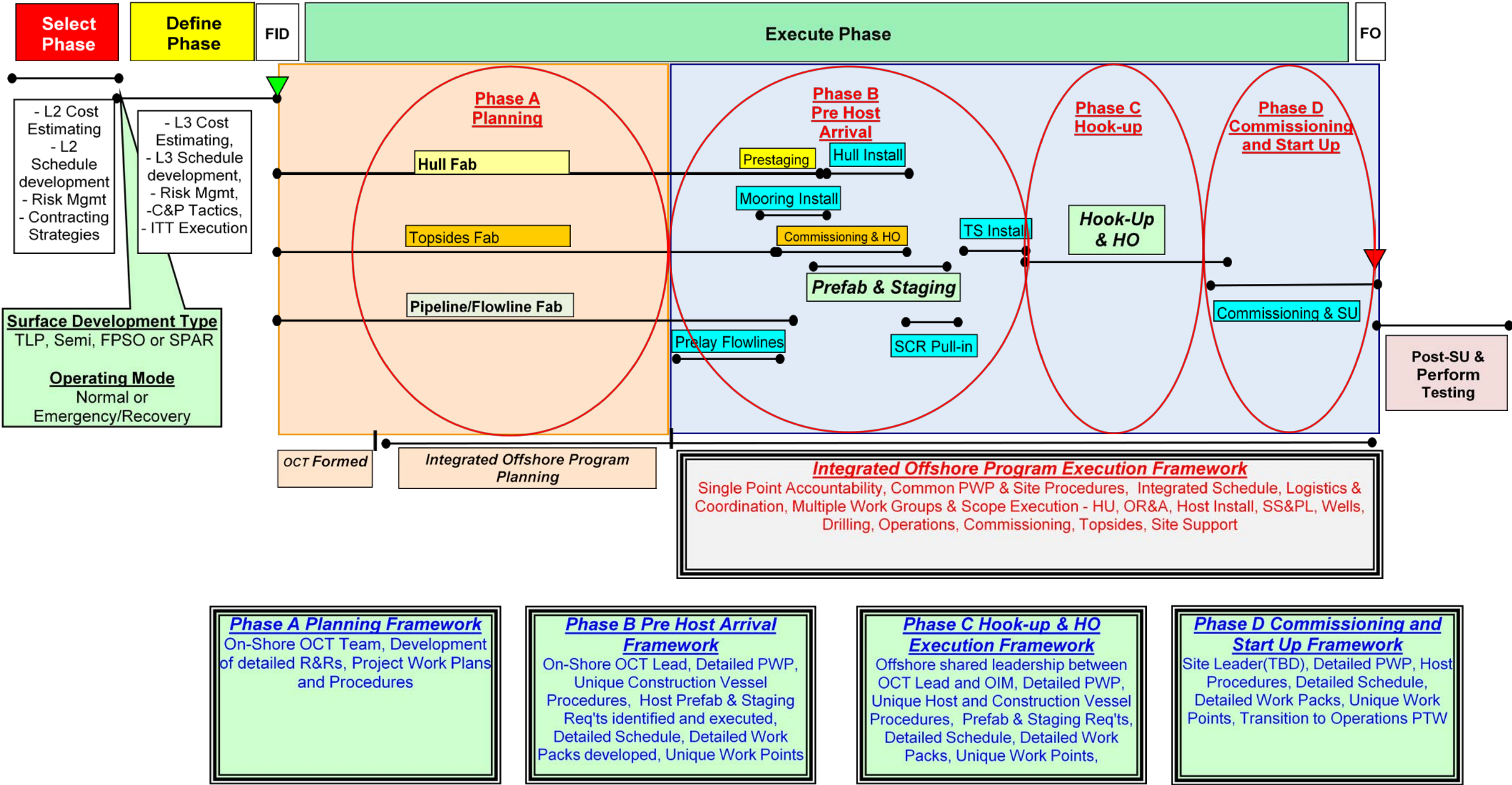


Figure 2.3 Typical offshore planning and integrated hook-up program timeline

2.2 SUMMARY OF DOCUMENT INTENT

In summary, this DEP Specification contains illustrations, reference documents, checklists and best practice recommendations for a project team to:

- Initiate an OCT
- Develop a project-specific management framework
- Establish a fit-for-purpose governance model
- Establish an OCT Manager with single point accountability to the Project Manager to deliver the entire offshore program
- Develop a detailed construction hook-up and mechanical completion management framework.

3. GOVERNANCE MODEL AND EXPECTATIONS (GREENFIELD – NORMAL MODE)

3.1 INTRODUCTION

The safe execution of a multi-discipline offshore project requires robust governance processes and an organization that can adapt and respond to changing demands. To accomplish this, a core group of project leaders cooperatively manage their diverse work scopes in an integrated team known as the OCT.

Section (3) illustrates the guiding principles and recommendations for the formation of the OCT, including its key governance processes and organization. This will allow a project to effectively:

- Form the OCT – with advice on timing, team composition and skill sets.
- Develop the reporting relationships between the OCT and typical Project Leadership Team (PLT).
- Develop the key roles and responsibilities of the core OCT members.
- Develop the single point accountability role of the OCT Manager during each of the sub-phases.
- Understand the transition and phasing of the OCT through its various phases.

Within the following topic sections, OCT Phases A, B, C and D will be referenced. These phases are characterized as shown in Table 3.1 below.

Table 3.1 Offshore program planning and execution phases

OCT Phase	Description
A	Pre-FID planning followed by post-FID OCT formation and pre-mobilization planning.
B	Initial offshore mobilization, various offshore drilling and construction activities through host moored into position.
C	Construction completion of subsea/export systems and hook-up and pre-commissioning of hydrocarbon systems (prior to introduction of well hydrocarbons).
D	Introduction of well hydrocarbons followed by commissioning, startup and performance testing.

3.2 OCT SCOPE OF WORK

3.2.1 Phase A

This phase begins during the system select phase and concludes with the commencement of the offshore activities.

Refer to Figure 2.2 and Figure 2.3 for an overview of pre-FID and post-FID OCT scope in Phase A.

3.2.1.1 Pre-FID (Phase A)

An OCT exists pre-FID as an informal team. The time commitment for team members pre-FID is limited. The size of the team is also generally limited to the various work scope leads (subsea, installation, topsides, wells, etc.). Several areas of essential planning associated with the offshore campaign shall be addressed during this period. These include:

- Cost estimates for offshore infrastructure (transportation, logistics, materials management, catering, etc.). Integrated planning and scheduling of the offshore campaign(s) with the rest of the project activities. Consider appropriate execution windows for various offshore vessels and associated work activities, including the development of a sail-away window notification strategy to ensure flexibility (potential late delivery of a major package(s)) in the offshore campaign.
- Provision of an integrating role for contracting strategy development of the various offshore work scopes.
- Leadership of risk management reviews for the planned offshore activities.
- Development of the management framework and staffing for the project's OCT to be effective post-FID.
- Development of the governance model between the OCT and Project Leadership Team.
- Ensuring input of the OCT requirements into the Project Execution Plan that enables alignment of Project Leadership, other Project Teams and the OCT.
- Development of contracting provisions in each of the offshore work scopes bid packages to reflect the requirements of the integrated offshore program.

3.2.1.2 Post-FID (Phase A)

The primary tasks of Phase A (post-FID) are to form the OCT itself and to complete the planning effort, prior to the initial offshore mobilization. Specific activities during the post-FID portion of Phase A include:

- Resourcing and recruitment of OCT personnel
- Use of team building techniques to build relationships within the OCT
- Preparation of the OCT project work plan
- Finalization of the Offshore HSSE Management System (including SIMOPs philosophy)
- Development of a Level 4 integrated schedule
- Development of risk and contingency management plans, including a decision framework for installation windows
- Preparation and award of infrastructure bid tenders, as required

3.2.2 Phase B

This phase begins with the first offshore campaign mobilization and concludes with the host moored in position. Examples of activities in this phase typically include: