Chapter 14
Integrated Operations in Petrobras: A Bridge to Pre–Salt Achievements

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ABSTRACT
Known as an integrated energy company that operates in all segments of the oil industry, Petrobras has a broad management experience and uses a multidisciplinary approach, which applies to different areas. Recently, the impressive discoveries of the Pre-Salt reserves have created an exciting scenario in multiple aspects. Petrobras expects to produce more than 5 million bpd of oil by 2020, out of which only 1 million will come from Pre-Salt. This leads to an approach that will require scalable and sustainable solutions that take into account the better understanding of how people, processes, technology, and governance issues are connected and managed (Henderson, J. et al., in this book). Considering past experiences and the complexity of the new oil and gas production scenario, Petrobras is preparing an even greater leap in its upstream operation and maintenance management systems – a corporate initiative called GIOp (acronym for Integrated Operations Management, in Portuguese) is being implemented. This chapter describes the implementation of GIOp in all upstream operational units of Petrobras in Brazil, considering the main organizational aspects, the methodology to develop a portfolio of opportunities, the scalability of the solutions, and the initial experience in Pre-Salt production.

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INTRODUCTION

The first experiences with upstream Integrated Operations in Petrobras took place during the last ten years, focusing initially on drilling centers. Some 3D visualization rooms were implemented. Also at this early stage, one specific center was put on operation in Brazil dedicated to turbo machinery condition based maintenance, providing the surveillance of equipments installed on Petrobras offshore platforms. Later on, the implementation of a systematic approach to redesign processes was promoted in production assets. Pilots were setup, addressing different scenarios of production in Brazil. Thus, many lessons learned came up for future initiatives.

The Integrated Operations in Petrobras is referred as GIOp. It is defined as the integration of disciplines, service companies and the organization, combined with data in the relevant time, considering the redesign of work processes, in order to have better decisions and more efficiency, using collaborative environments. The main focus is to be proactive instead of reactive, forecasting situations before they become critical and identifying opportunities to gain and improve these processes.

The impressive discoveries in the Pre-Salt have created an exciting reality in multiple aspects. Petrobras is the operator of almost all blocks of this new exploratory frontier. In order to more than double the current proven Brazilian reserves in the next decade, big challenges must be faced, like the distance to the coast, water depth and the complexity of the reservoir. In 2020, Petrobras plans consider an oil production of more than 1 million bpd from Pre-Salt reserves. The new scenario will demand a relevant change in the management of the main processes. Formigli-Filho et al. (2009) states that: “The successful development of the Santos Basin Pre-Salt will be a hallmark for Petrobras and its partners, contributing for the oil industry development, particularly in Brazil.”

GIOp is dedicated to enhance collaboration across the relevant processes. An implementation strategy has been carried out in all Petrobras E&P Operation Units with significant importance in the greenfields of the Santos Basin, province where most of the reserves of Pre-Salt are located. Special attention was dedicated to set the objectives and drivers. The opportunities of GIOp in Pre-Salt were analyzed through an intensive assessment. In order to help the methodology of redesigning processes, a pilot of application is already running in temporary environments considering the existing facilities (rigs and production units) in Santos Basin.

The development of the Pre-Salt Layer in the Santos Basin involves overcoming challenges related to reservoir characteristics, water depth, and logistical issues associated with the distance of the greenfields in relation to coast. Thus, the optimization and integration of certain processes is essential to reduce operational and investment costs in order to ensure higher economic return.

GIOp will allow an increase in operational safety activities in the Santos Basin, as it is based in a better control and monitoring of the facilities and processes, from collaborative environments, minimizing the transportation of people, equipment and materials in huge distances. In that sense, a systemic view of operations will be provided to deploy the demanded infrastructure and also the solutions to operational problems in order to enhance of production and operational efficiency and lower CAPEX and OPEX.

The implementation of GIOp across Petrobras units will be described from the past history cases of smart fields, considering the main aspects of the Petrobras organization, the methodology used to develop a portfolio of Integrated Operations opportunities, the scalability of the solutions and the early results.

In this chapter, the experience of Integrated Operations in Petrobras is described to provide a practical approach of the industry in a different cultural scenario rather then the Norwegian
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