Strategic Development of Offshore Oil Production in Katakolo of Greece under Multiple Criteria Considerations

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ABSTRACT

The aim of the present paper is to investigate the feasibility and the type of method for oil production in the offshore area of Katakolo in western Greece. The strategic development of oil production analyzed herein is based on the following five factors: (1) social conditions of the area, (2) geological-geophysical conditions and oil deposit, (3) socio-economic impact and financial considerations of the three proposed methods for oil production, (4) methods for oil storage and transportation and, (5) evaluation and comparison of the three oil production methods.

Based on the proposed strategic framework and the results of the associated analysis, it can be stated that this effort is the first one to present the most efficient approach for developing the oil field in Katakolo, taking into account environmental constraints, socio-economic factors and safety issues.

KEY WORDS: strategic development; safety; technical, economic and environmental criteria; geological and geophysical conditions; social problems; evaluation of the oil production methods.

INTRODUCTION

The continuous increase of energy demand around the world stimulates interest in finding new oil fields. Oil exploitation represents a significant component of the strategic plans for energy requirements in many countries. While oil remains the dominant source of energy in Greece, exploration till now has been very limited and only in northern Aegean a low oil production exists since 1981. Greece can be considered the least oil explored country in the eastern Mediterranean region. The legal framework being applied since 1995 has led to this stagnation. The removal of this weakness was imperative. The enactment of the new Law 4001/2011 in combination with the preexisting one formed a new flexible legal framework.

To overcome the stagnation, Greek authorities focused their efforts on an aggressive oil exploration campaign starting from non-exclusive seismic surveys in the Ionian and southern Cretan Sea and introducing three areas in the procedure of open door (MEECC, 2011). This procedure can be applied in Greece because the areas are permanently available, as they belong to the state. Exploitation by previous contractors was not carried out because they withdrew their interest (MEECC, 2011). One of these areas is Katakolo in Western Peloponnese.

The discovery of the offshore oil field of Katakolo came as result of exploration and legislative activity between 1975 and 1995. Three major events have occurred in legislation during this period. The first one, in 1975, was the foundation of Public Petroleum Corporation (DEP) and the approval by the Greek parliament of the first Law 468/76 regarding the exploration and production of hydrocarbons. Ten years later, in 1985, DEP EKY S.A. was formed as a subsidiary of DEP S.A., and National upstream and licensing procedures were established. Finally, in 1995, the Law 2289/95 was passed, which incorporated the relevant EU directive 94/22/EE. Within the framework of this legislation, the Greek State granted DEP S.A. and DEP EKY S.A. with exclusive exploration and production privileges in 24 areas on land and sea. The Katakolo oilfield was discovered in 1982 by DEP S.A. After the integration of Katakolo area in the process “open call- open door” it is imperative oil production to be investigated in this area.

This paper is composed of four parts. The first part deals with the region of Katakolo and presents the social conditions and culture of the region. It also deals with issues related to the capacity, existing information, criteria for the specific location, geological and geophysical characteristics of the field. Finally, the possibility to produce oil under the Natura 2000 regulatory framework is explored. The second part includes information about the three production methods. In particular, this part deals with the effects of operational considerations, environmental, geological and geophysical conditions, total cost estimation and specific details for the onshore facilities, and oil loading and transport method. The third part includes the evaluation of the oil production methods in a strategic framework, using technical, economic and environmental criteria. Evaluation is performed utilizing two separate analytical processes, Portfolio