Managing Well Integrity of offshore field and achieving high success within short dura- tion

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INTRODUCTION

Bunduq has been producing oil from an offshore field for morethan40 years since 1975. While stable oil production was continued for long time, severe well integrity issues were identified in several wells and rectifiedduringarigoperationin2013-2015. However,there was no proper well integrity monitoring concept orsystem in place by then. Bunduq considered that well integrity is atop priority and established a Well IntegrityTaskForceteam(WITF)

AIM:

1. To verify and validate well integrity issues in the offshorefield
2. To mitigate well integrity issues in order to sustainoilproduction
3. To establish Well Integrity Management system in line withinternational standards andprocedures

MATERIALS AND METHODS:

In order to tackle well integrity issues on urgent basis, the four phase system was considered. In Phase-1, an innovative Risk- based Well Integrity verification program, called "Well Life Extension methodology", was implemented.The aim was to evaluate the current integrity status of each well barrier element,and then focus on the risk of relevant failures caused by aging. Phase-2 comprised of utilizing be stinternational and industrial practices/procedures for further identification and validation ofintegrity issues. In Phase-3, creation of permanent plans and theWell Integrity Management System were established. InPhase- 4,allmitigation plans to secure well condition were implementedin accordance with the WIMS from January 2018 to December 2019.

RESULTS:

Total of 54 existingwell swere evaluated and future well integrityissues were also anti ipated through arisk- based study. In addition, verification of integrity issues was carried out while getting accessibility into annuli of all wells. Around 36 wellheadswere hot tapped for installation of proper annuli monitoring system. Furthermore, integrity of wellhead seals and critical well
barrier elements were validated through well head integrity survey sand surface bleed offtests. Based on industrial and international standards ,a formal well integrity management system which enables Bunduq to improve asset reliability, upgrade safety levels and minimize both downtime and cost associated with implementation works was established. Moreover, based on asuitable risk reductionaction plan, permanentre medialplans were eventually implemented through achieving a significant milestone in turning around itswell integrity. Currently, the WIMS supported with a dedicatedsoftware is effectively supporting analysis of the current wellintegrity status and identification of the well barrier elementsthat are expected to become critical in the future.

CONCLUSION:

The implementation of systematic phased approach enabledBunduq to find existing well integrity issues, identify best international practices for rectification issues, and make theremedialplan. Further more, by introducing the WIMS which is aformal management system into the Company,it is possible toefficiently conduct the several measures, such as multi-casingcorrosion logging survey, downhole leak rate measurements,periodic wellhead surveys, etc. and manage well integrity in our offshorefield.

KEY WORDS: OFFSHORE FIELD, WELL INTEGRITY, MANAGEMENT SYSTEM

BIOGRAPHY:Muhammad Azam Bugti is working in Bunduq Company Limited (UAE) as a Specialist, Petroleum Engineer. He is responsible and in charge of Petroleum Engineering and WellIntegrity tasks within the company. He has earlier worked with Pakistan Oilfield Limited and Oil & Gas Development CompanyLimited as a Petroleum Engineer and later he started workingin Cameron Middle East (A Schlumbergercompany).