

ABSTRACT

This work aimed to accurately identify and solve production issues in Sudanese field using pipeline network modeling. Pipeline network plays important role in delivering the production from wellhead to Field Processing Facility (FPF). Bottlenecks in pipeline can cause rise in wellhead pressure, which can have a very strong impact on production sustainability. Most of Sudanese oilfields are facing challenges to sustain their production, which is annually decreasing dramatically. Hamra oil field was taken as case study. Real data was collected from the field based on the software requirement to build a physical model that enable us to identify production issue and simulate the optimum and profitable condition that can be achieved with existing equipments in addition to ease decision making while forecasting future plans. Real data was collected from the field based on the software requirement to build a physical model that enable us to identify production issue and simulate the optimum and profitable condition that can be achieved with existing equipments in addition to ease decision making while forecasting future plans.

As a result of this study the reduction of the production is mainly due to bottlenecks in the flow lines which have been identified.

المستخلص

اغلب الحقول السودانية تعاني تحديات المحافظة على معدلات الانتاج التي تتناقص بمعدلات كبيرة سنوياً.

هذا المشروع يهدف الى ايجاد حل يساعد على تحسين معدلات الانتاج في حقل حمرة عن طريق التعرف على الاسباب المحتملة والعوامل المؤثرة عليها باستخدام برامج مطورة لتمثيل نماذج شبكات الانابيب .

خطوط شبكة النقل تلعب دوراً فعالاً في نقل الخام من الابار الى محطات المعالجة المركزية نقصان القطر الداخلي لهذه الانابيب بسبب ترسبات الشمع ومكونات الخام الثقيلة تؤدي الى ارتفاع في ضغوط الجريان من الابار وخلال انابيب التجميع مما يؤدي الى تقليل معدلات الانتاج اليومية .

تم استخدام برنامج (PIPESIM) وهو احد افضل هذه البرامج لتحليل البيانات الحقلية وايجاد الظروف المثلى والانتاج الامثل الذي يمكن تحقيقه تحت الظروف التشغيلية والمعدات المتاحة وبالتالي المساعدة على اتخاذ القرار والتخطيط المستقبلي لتطوير الحقل .
كنتيجة لهذه الدراسة وجد أن نقصان الانتاج هو نتيجة لنقصان القطر الداخلي للأنابيب بسبب تراكم اشمع والمركبات الهيدروكربونية الثقيلة.

ACKNOWLEDGMENT

First of all we would like to express our gratitude towards Dr. Fatima Ahmed Albrair, who always found time and put in an effort in providing us with the guidance and motivation required to complete the project.

We would also like to extend our appreciation towards:

ENG. Amjad Abdalla (GNPOC) senior Production engineer for his support and guidance regarding obtaining and analyzing the data required to complete this project.

ENG.Danish Ahmed Khan (Schlumberger Software Solutions) for providing the licensed software, and technical support throughout the project.

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Abbreviation

API	American Petroleum Institute (Gravity)
BDP	Barrel Per Day
BHP	Bottom Hole Pressure
CDS	Center design station
COM	Component Objective Model
ENG	Engineering
ESP	Electrical Submersible Pump
ESRT	
FDP	Field Develop Plan
FPF	Filed Production Facilities
GLV	Gas lift
GMOS/NetSim	Global Manufacturing & Logistic Optimizing System/NetwokeAnalysis
GNPOC	Greater Nile Petroleum Company
GOR	Gas Oil Ratio
IPR	Inflow performance Relationship
MMSCF/D	Billion Standard Cupic Feet Per Day
MPOPD	Million Barrel Per Day
OFVF	Oil formation Volume Factor
OGM	Oil Gathering Manifold
OLGA	Flow Assurance Simulator
PCP	Progressive Cavity Pump
PVM	Parallel Virtual Machine
PVT	pressure volume Temperature
STB	Stock Tank Barrel
STB/D	Stock Tank Barrel Per Day
STB/SCF	Stock Tank Barrel Per Standard Cubic Feet
VFP	Vertical Flow performance