commingled separator node. So, wells producing from formation U11 have a very high wellhead pressure and these wells should be choked. These wells are often hydrated and blocked due to high pressure difference between the wellhead and the downstream choke flowline when these wells are equipped with a small choke. Hydrate formation occurs because the stream of formation fluid is throttling through the choke and, as the fluid undergoes instantaneous expansion after the choke, temperature decreases and water which is present in the fluid mixture falls out as hydrates. Therefore, these wells are equipped with chokes of a bigger cross-section size and hydrate formation is prevented. However, a bottleneck effect occurs in the flowline due to increased pressure, and some ESPs cannot provide enough head. Absence of methanol treatment unit complicates the situation. As a result, oil production schedule is delayed.

MAIN OBJECTIVES

The main objective of this project is to optimize the development of a sector of oil-gas condensate Field X using an integrated field model created in METTE software. In order to meet this objective, it is necessary to create an accurate integrated model, simulate this model with different variants of gathering systems, estimate at what extent the gathering systems constrain oil production, and select an optimal variant based on economic and technical efficiencies of the considered variants. Creation of an integrated model was divided into several parts which are discussed below.

Part 1: Conversion and adaptation of hydrodynamic flow models from Eclipse reservoir simulator into Tempest MORE.

As METTE software can be integrated with hydrodynamics flow models built in Tempest MORE reservoir simulator, existing hydrodynamic flow models originally created in Eclipse software had to be converted to Tempest MORE and matched with history parameters.

Part 2: PVT model creation.

PVT model was created by correlation module of METTE software.

Part 3: Construction of well profiles and well calibration.

Construction of well profiles based on results obtained from directional surveys was performed. Calibration was carried out on well test investigations.

Part 4: Network construction and its integration with a well model.

CONCLUSIONS

In this study confirmed the influence of common gathering system on the efficiency of field “X” development. With the help of integrated model reveals the phenomenon of well bottlenecking caused by high wellhead pressure of wells exploiting formation U11. This has become possible with the integration of hydrodynamic flow models with production system in METTE software.

Offered conceptual designs were considered and conceptual design with high-pressure line has shown the best results. After simulations deferred oil production from variant accepted in company equals to 136000m3. According to rough economic estimates implementation of variant with high pressure line can bring two billion RUR profit for company in first two years. Thus using the results of modeling shows can predict the development scheme of field “X”.

In the future, it is planned to work out the most detailed scheme of development Field X with integrated model. The real-time it is also planned to continue this project in order to create more accurate integrated model.

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TRACE ELEMENTS IN THE TAZARE COAL FIELD, ELBRUS COAL BASIN, IRAN

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The major purpose of this paper is to analyze the concentration of some trace elements in the Tazare coal field; to compare the stated content values with respective Clarke values for coals as well as possible commercial values.

The Tazare coal feld is situated in the Elburs coal basin, Iran. The coal-bearing sediments are sandstones, siltstones, claystone, coal seams, which are of Triassic-Jurassic age. The coals are classified as bituminous, from forge coal to gas and longe flame coal [1].

Geoecology and Geochemistry Department’s members (NRI, TPU) have performed geochemical sampling at Tazare coalbed. 38 samples were selected from 7 coalbeds (table).

The applied methods were instrumental neutron activation analysis (INAA) and atomic absorption spectroscopy (AAS) elemental analysis.

The analyses were made in laboratories of Geoecology and Geochemistry Department in Tomsk Polytechnic University.

Neutron activation analysis (NAA) is a nuclear process used for determining the concentrations of 29 elements. The sample is bombarded with neutrons, causing the elements to form radioactive isotopes. The radioactive emissions and radioactive decay are well known for each element. Using this information, it is possible to study spectra of the emissions of the radioactive sample and determine the concentrations of the elements in it.

Hg content was determined by atomic absorption spectroscopy. The analysis was performed with the mercury analyzer RA 915+ with PYRO – 915+. AAS is a spectroanalytical procedure for the quantitative determination of chemical elements using the absorption of optical radiation (light) by free atoms in the gaseous state. At the resonance transition frequency atoms absorb light selectively and pass from ground to exited state.

Table

Average trace element concentrations in the Tazare Coal Field, ppm

№ of coalbed	*Sc*	*La*	*Ce*	*Sm*	*Eu*	*Tb*	*Yb*	*Lu*	*Hf*	*Ta*	*Au**	*Hg**	*U*	*Th*
k5	3,3	1,6	4,7	0,4	0,1	0,1	0,4	0,1	0,8	<0,1	0,29	102,7	0,3	0,9
k10	15,4	30,2	54,6	5,5	1,4	0,9	2,4	0,4	3,2	<0,1	0,1	24,8	2,9	10,3
k12	17,8	29,0	53,3	4,3	1,2	0,9	2,4	0,4	2,8	0,6	3,7	199,7	3,5	9,8
k17	19,1	10,5	18,3	1,6	0,5	0,4	0,1	0,3	1,7	0,2	1,6	22,5	1,5	3,5
p7	13,6	11,5	22,6	1,8	0,5	0,5	1,7	0,3	1,6	0,4	4,2	50,3	2,3	5,6
p10	5,7	6,4	17,7	2,4	0,7	0,7	1,8	0,3	0,5	0,2	2,4	61,1	1,3	1,6
k25	18,9	32,5	54,4	5,0	1,3	0,9	2,9	0,4	3,5	0,9	0,1	19,3	3,8	10,8
Average	13,7	18,6	33,9	3,2	0,8	0,7	1,7	0,3	2,2	0,3	1,8	95,0	2,3	6,5
Clarke coal values [2]	3,7	11,0	23,0	2,2	0,4	0,3	1,0	0,2	1,2	0,3	4,4	100,0	1,9	3,2
Minimum acceptable commercial value [3]	10	150	30	n.i.	n.i.	n.i.	1,5	n.i.	5	1	20,0	1000,0	n.i.	n.i.

* – ppb; n.i. – no information

Research results show that the major trace elements in Tazare Coal field are Sc, La, Ce, Sm, Eu, Tb, Yb, Lu, Hf, Hg, U, Th. The coals of the field are potential for production of Sc and lanthanide elements. Scandium reveals the highest content in coalbeds k10, k15 and k25. The concentrations of the elements of coalbed k5 have low values.

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KONTROLLE DER ARBEIT VON INDUSTRIELLEN KATALYTISCHEN REFORMING-ANLAGE A - 35 - 11/450 K KOMSOMOLSKER RAFFINERIE

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Heutzutage spielen katalytische Prozesse eine wichtige Rolle in der Verarbeitungsindustrie. Ein wichtiger katalytischer Raffinerieprozess ist das Reformieren (von lat.: reformare = umgestalten). Es dient zur Isomerisierung und Aromatisierung von Alkanen bzw. Cycloalkanen. Ziel dabei ist es, die Oktanzahl des Benzins zu erhöhen.

Das flüssige Hauptprodukt, das so genannte Reformat, besteht vorwiegend aus Benzol, Toluol, Xylolen sowie verzweigten und linearen Alkanverbindungen. Ein wichtiges Nebenprodukt ist Wasserstoff, welcher unter anderem in Entschwefelungs- und Hydrocracking-Prozessen benötigt wird. Durch Cracken werden die gasförmigen Kohlenwasserstoffe Methan, Ethan, Propan und Butan erzeugt [1].