Sahara

Waterflood Pattern Simulator

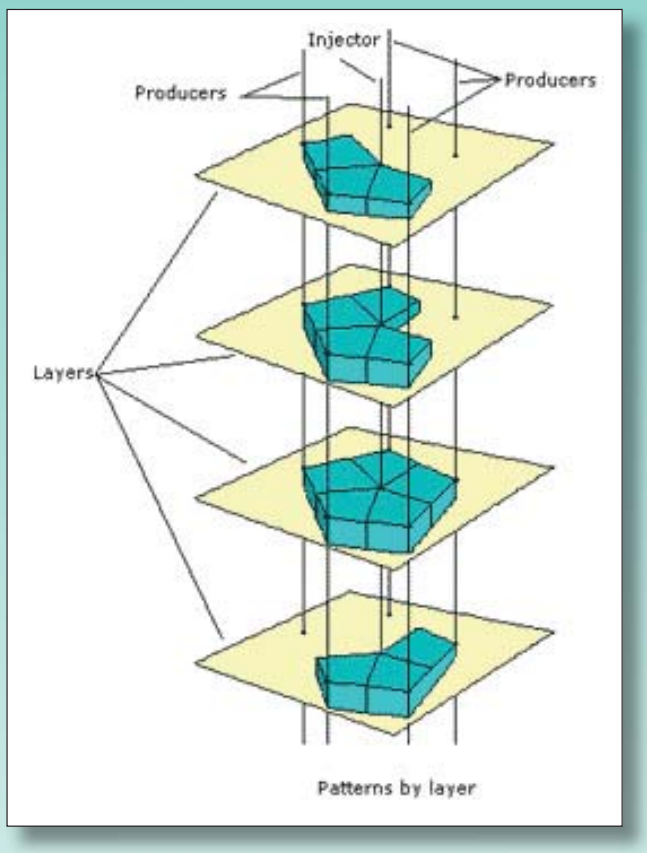
interfaces

Reservoir Visualization, Analysis & Management Software

Sahara has a multi-layer waterflood pattern simulator, which can be used to generate a historical, well by well history match and production forecasts.

Analytical models:

- Segregated flow
- Buckley- Leverett
- Craig-Geffen-Morse
- Statistical curve
- WOR-Np method



Waterflooding patterns can be designed independently for each layer and modified along time to reflect the real operating history of the flood.

Therefore, an accurate description of the detailed historical operating conditions (well recompletions, conversions and workovers) for both injector and producing wells, can be set up for the simulation.

The results generated by the simulator can be displayed as production profiles for each producing well, for a pattern or for a given layer.

Saturation maps, injected pore volumes, oil recovery factors and injection-production balances can also be represented as a function of time.

3D views can easily be represented, showing the connections among producers and offset injectors and vice versa. In these views, vector graphs of the calculated variables, as well as 3D bubbles of the injection and production cumulatives per well in each layer, can be displayed in the 3D Graphics window.

By using the simulator, different injection-pattern alternatives can be tested. Thus, sensitivity analyses for alternative flood responses, related to different pattern configurations can be produced in a short time, to assist in the design of the optimum water flood.

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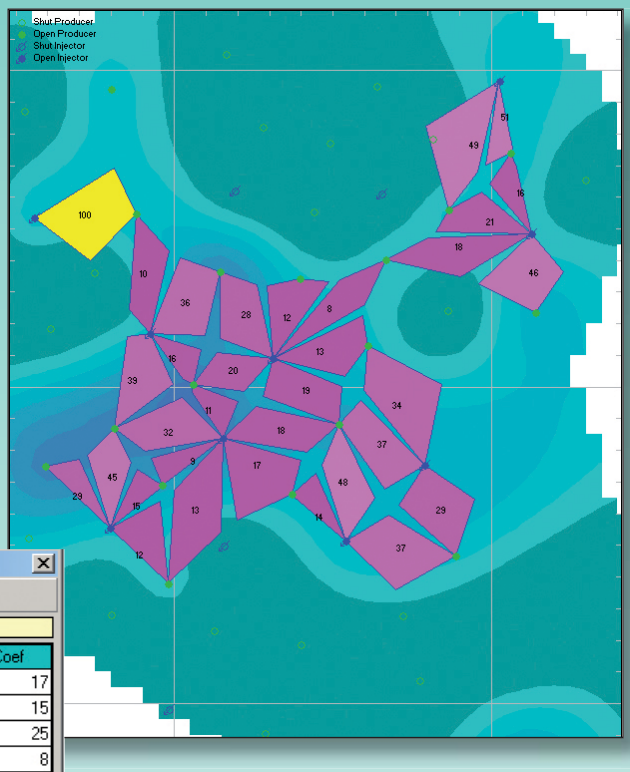
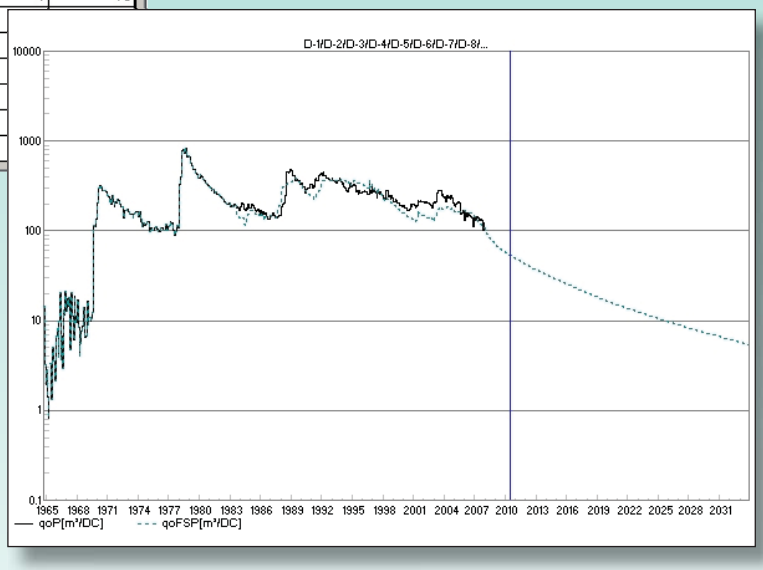
The time required for the preparation of the data and the subsequent calculations is in the order of a few minutes. As a result, this tool is very powerful, not only for optimizing future flood results, but also for solving typical water flood situations (anticipation of channeling problems, identification of inter-well connections affecting well responses, etc.) in quasi-real time.



Table

Layer Elements Data Z-36 Date 9-2013

Injector	Producer	Vp [m³]	Wi [Mm³]	Wid [VP]	So [%]	OIP [Mm³]	Np [Mm³]	Coef
D-25	D-59	15577.5	16	1.009	36.10	5	3	17
D-25	D-66	13357.3	13	0.936	36.64	5	2	15
D-25	D-14	22807.0	23	0.994	36.21	8	4	25
D-25	D-63	7555.9	7	0.922	36.75	3	1	8
D-25	D-90	9451.8	6	0.614	39.48	4	1	10
D-25	D-39	22739.2	18	0.811	37.65	8		
D-78	D-59	9382.5	26	2.818	27.76	2		
D-78	D-14	27503.4	81	2.957	27.35	7		
D-87	D-16	28878.9	143	4.949	23.22	6		
D-87	D-14	27941.6	136	4.853	23.36	6		
Total		185195.1	468	2.529	30.89	54		



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