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Case Study Oil Flowing Material Balance

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Summary

This Case Study demonstrates the application of the **Oil Flowing Material Balance (FMB)** engineering technique using the **E&P Portal**.

The Study is based on the oil well from a field in West Siberia, Russia.

It is shown how to:

- Input the data to the **E&P Portal**;
- Apply the **Oil FMB** to estimate the well's STOIP and JD;
- Save and export the analysis results.

All the input data is attached to the Case Study for the reference.

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Introduction

E&P Portal is a service to identify production enhancement opportunities and maximize production and recovery. The average production increase for the last 3 E&P companies applied the **E&P Portal** was 38%.

Oil FMB is the advanced engineering technique published in 2005 by Louis Mattar and David Anderson. Original paper PDF: [Dynamic Material Balance \(Oil or Gas-In-Place Without Shut-Ins\)](#).

The details on math and physics of the **Oil FMB** method are published on the wiki page:

[https://wiki.pengtools.com/index.php?title=Oil Flowing Material Balance](https://wiki.pengtools.com/index.php?title=Oil_Flowing_Material_Balance)

Oil FMB is available at the **E&P Portal** as one of its engineering workflows. The access to the **Oil FMB** tool at the **E&P Portal** is free for the personal use, once sign up at ep.pengtools.com.

Well Data

Well “8” was drilled down to **9240** ft.

Well design: **13 3/8** in conductor down to **101** ft; **9 5/8** in surface casing down to **2699** ft; 7 in production casing down to **9240** ft.

The well “8” was perforated and hydraulically fractured in “B2” reservoir of the “Superior” field on 01.05.2017¹.

The “B2” reservoir was perforated as follows: top **MD 8850** ft, bot **MD 8897** ft, by “Mega-73 BG” gun with shot density of **6 SPF**.

Well completion string is **2 7/8** in down to **8102** ft with the ESP on **7905** ft.

From the log analysis report the well **kh** is 17.8 md*ft.

The post frac report suggests the well **JD** is 0.6.

The initial reservoir pressure at the well was measured to be 2689 psia.

The well was put on production with the ESP on 26.06.2017.

The field team routinely gathers the well measures and flow test data (dynamic fluid levels, annular pressures, oil, water, gas flowrates etc.). The ESP intake gauge data is also available through the SCADA system.

The well data is attached as “well 8 daily data.csv”.

Field	Well	Date	D Choke Tub	Fluid Level	Gas Product	Liquid Product	Oil Product	P Ann, psia	P Line, psia	P Tub, psia	PIP, psia	Pres, psia	Solids Amou	Uptime, h	Water production Volume, bbl
Superior	8	16.06.2017										2689.35		0	
Superior	8	17.06.2017										2689.35		0	
Superior	8	18.06.2017										2689.35		0	
Superior	8	19.06.2017										2689.35		0	
Superior	8	20.06.2017										2689.35		0	
Superior	8	21.06.2017										2689.35		0	
Superior	8	22.06.2017										2689.35		0	
Superior	8	23.06.2017										2689.35		0	
Superior	8	24.06.2017										2689.35		0	
Superior	8	25.06.2017										2689.35		0	
Superior	8	26.06.2017		4455.38		788.74	236.62	420.3	367.4	411.49	1440.2	2321.95	48.58	24	
Superior	8	27.06.2017		5352.62		751.63	402.12	411.49	367.4	418.83	1028.71	2321.95	48.58	24	
Superior	8	28.06.2017		3648.29		742.2	541.8	420.3	352.7	396.79	749.49	2321.95	48.58	24	
Superior	8	29.06.2017		3648.29		729.62	542.1	420.3	360.05	396.79	690.71	2321.95	48.58	24	
Superior	8	30.06.2017		3996.06		661.06	544.71	421.77	360.05	396.79	617.23	2321.95	18.63	24	
Superior	8	01.07.2017		3943.57		636.53	564.6	423.24	367.4	396.79	573.14	2321.95	18.63	24	
Superior	8	02.07.2017		3490.81		625.21	571.44	427.65	352.7	382.09	558.44	2321.95	18.63	24	
Superior	8	03.07.2017		4379.92		578.03	503.47	436.47	367.4	382.09	573.14	2321.95	18.63	24	
Superior	8	04.07.2017		4078.08		533.37	486.44	432.06	360.05	382.09	573.14	2321.95	18.63	24	

Figure 1 . Well “8” daily data file

¹ Note that the well, reservoir, field names as well as well production data and dates were changed for the purpose of this study

Reservoir Data

The "B2" reservoir data is given below:

STOIIP		128 MMstb
Connate water saturation	Sw	35 %
Rock compressibility	cr	4.36E-6 psia ⁻¹
Initial reservoir pressure	Pi	3262 psia
Initial reservoir temperature	Ti	212 F
Oil density		37 API
Bubble point pressure	Pb	2486 psia
Solution gas ratio	Rs	1011 scf/bbl
Gas specific gravity	SGgas	1.2
Water specific gravity	SGwater	1

Table 1 . "B2" reservoir data.

Data Input to the E&P Portal

Signing up

First open ep.pengtools.com in your browser and signup or login to the **E&P Portal**.

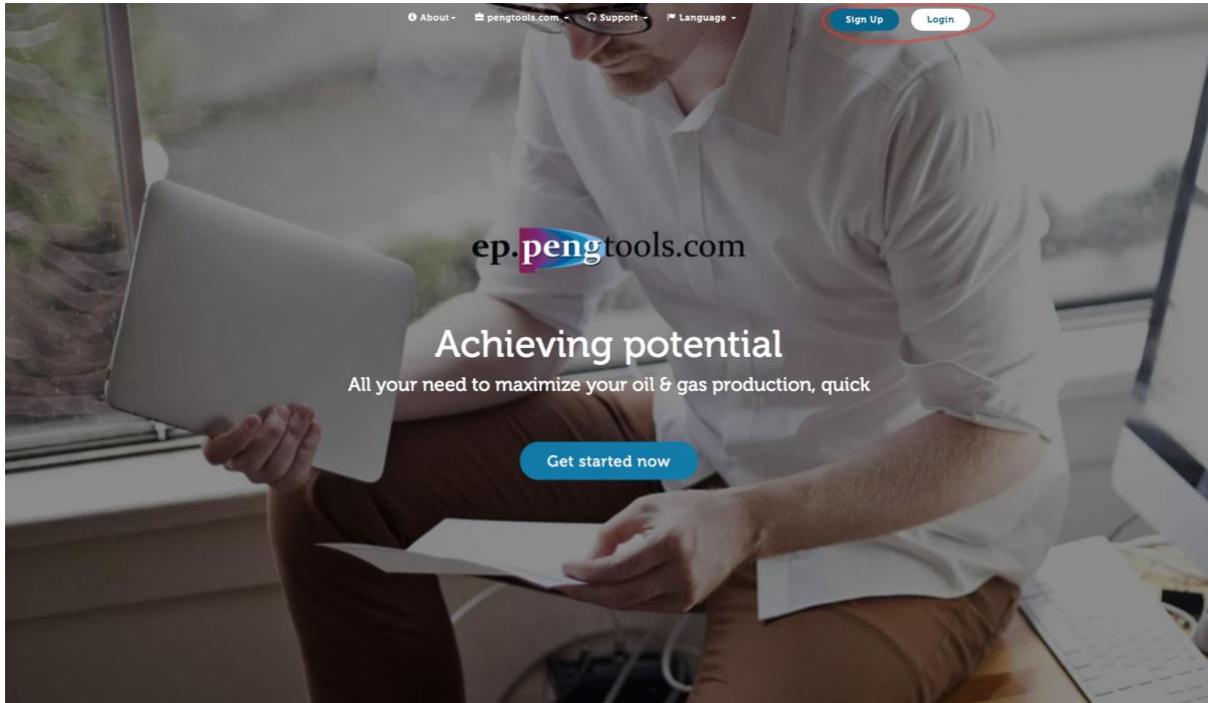


Figure 2 . E&P Portal landing page

After signing up /logging in you'll see the main **E&P Portal** page:

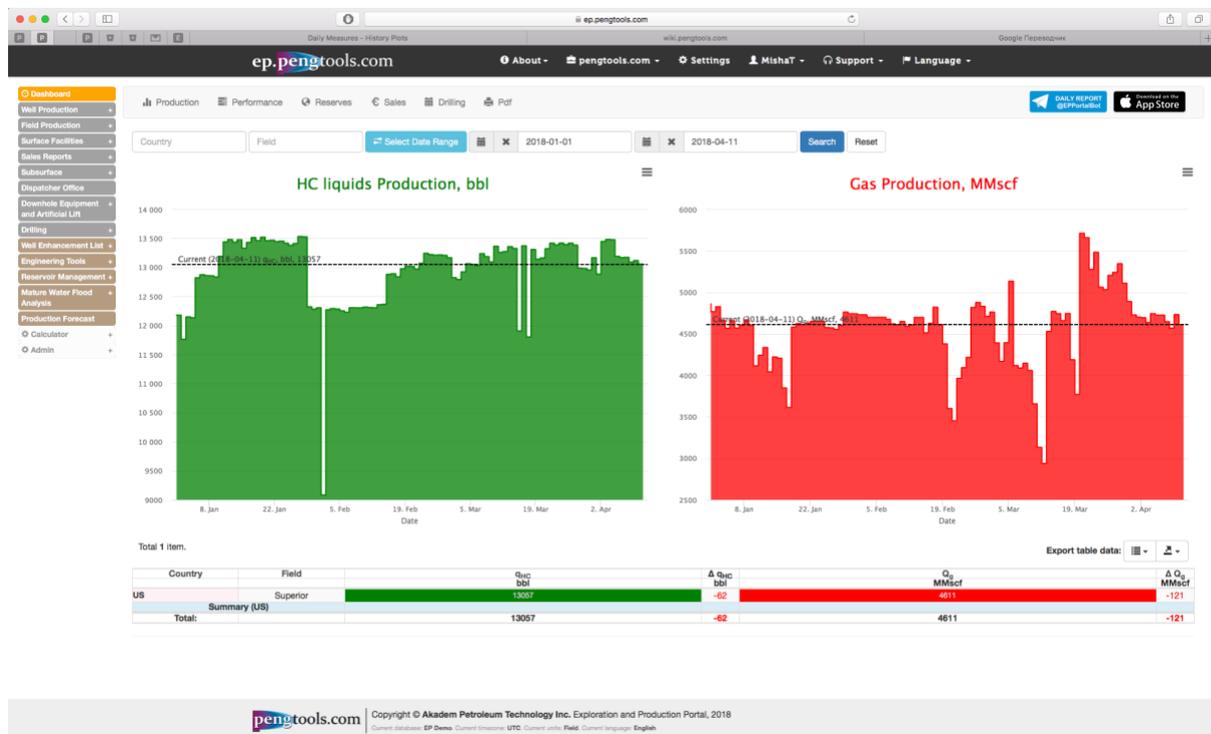


Figure 3 . Main page of the E&P Portal

Check the units in the page footer to be “Field”.



Figure 4. Field units in the main page footer

Check the current database in the page footer to be “EP Demo”.



Figure 5. Current database in the main page footer



Now you are ready to start entering the data into the **E&P Portal**

Adding the “Superior” field

In the left menu open the “Fields” page of the “Subsurface” module:

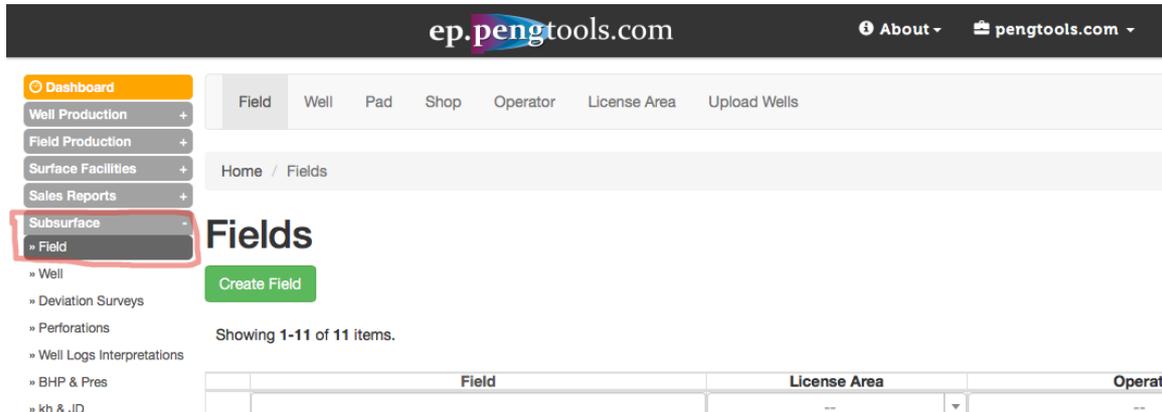


Figure 6. Fields page of subsurface module of the E&P Portal

Click “Create Field”, fill the form as follows and click “Create”:

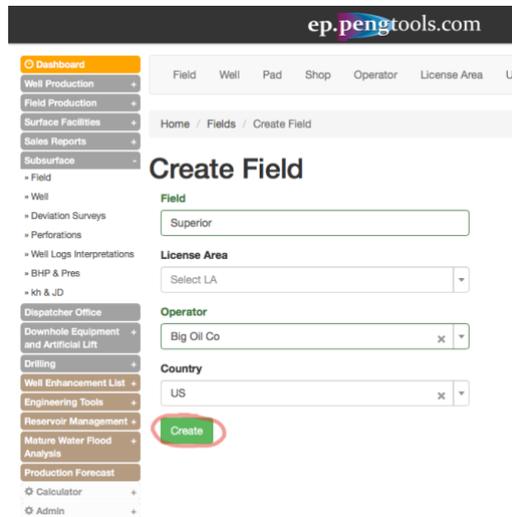


Figure 7. Creating the “Superior” field in the E&P Portal



Now you have successfully added the “Superior” field to the E&P Portal:

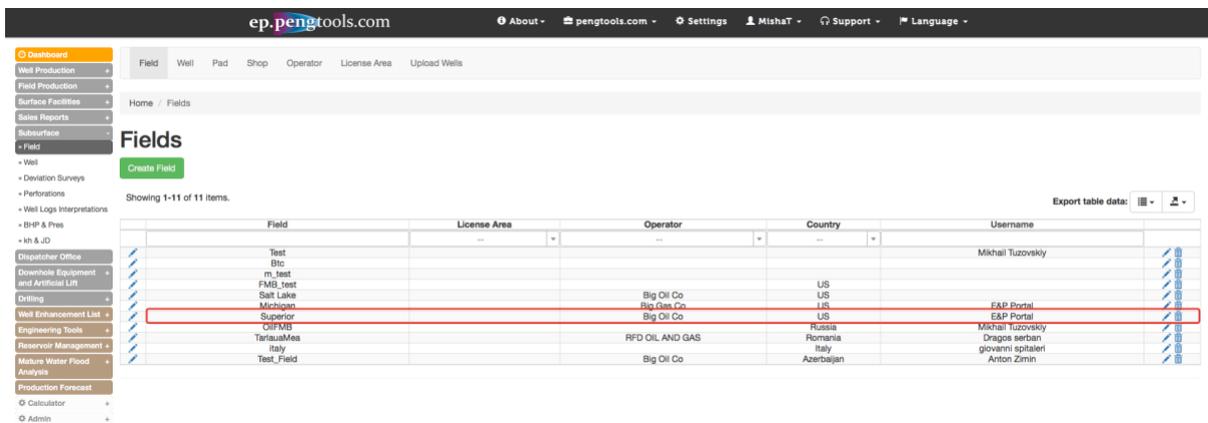


Figure 8. “Superior” field in the E&P Portal

Adding the “B2” reservoir

In the left menu open the “Reservoirs” page of the “Reservoir Management” module:

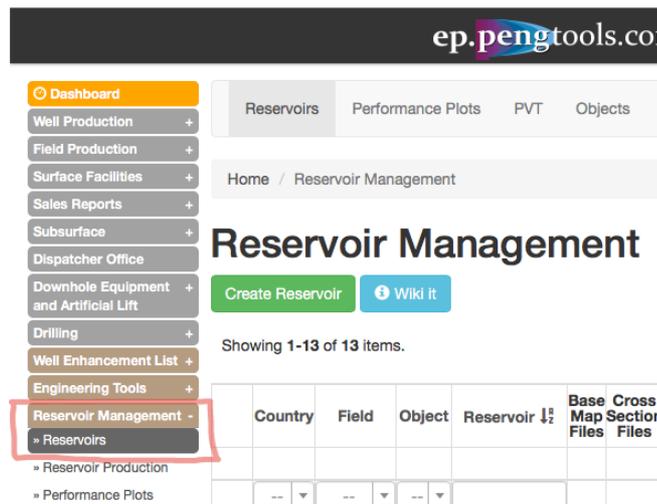


Figure 9. Reservoirs page of Reservoir Management module of the E&P Portal

Click “Create Reservoir”, fill the form as follows and click “Create”:

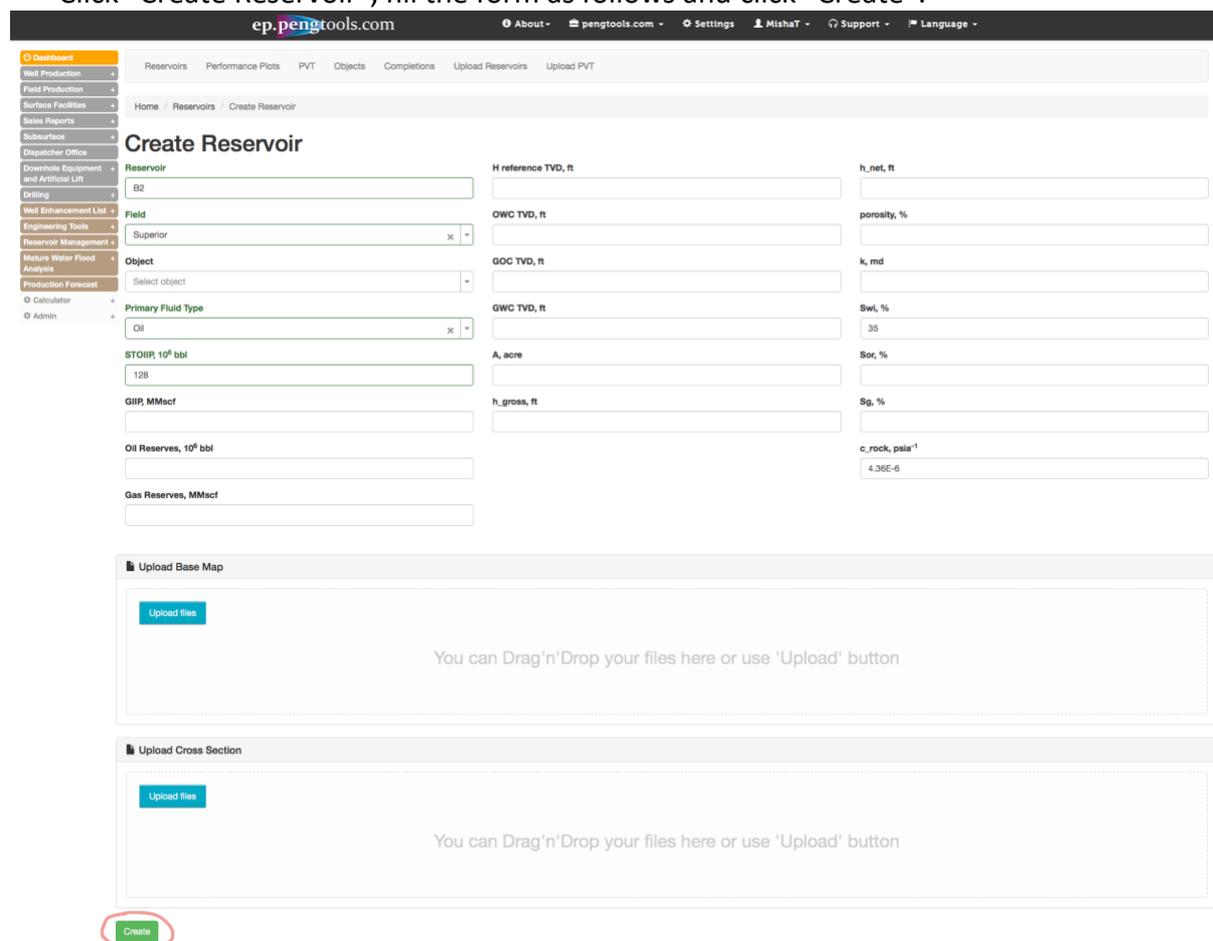


Figure 10. Creating the “B2” reservoir in the E&P Portal



Now you have successfully added the “B2” reservoir to the **E&P Portal**:

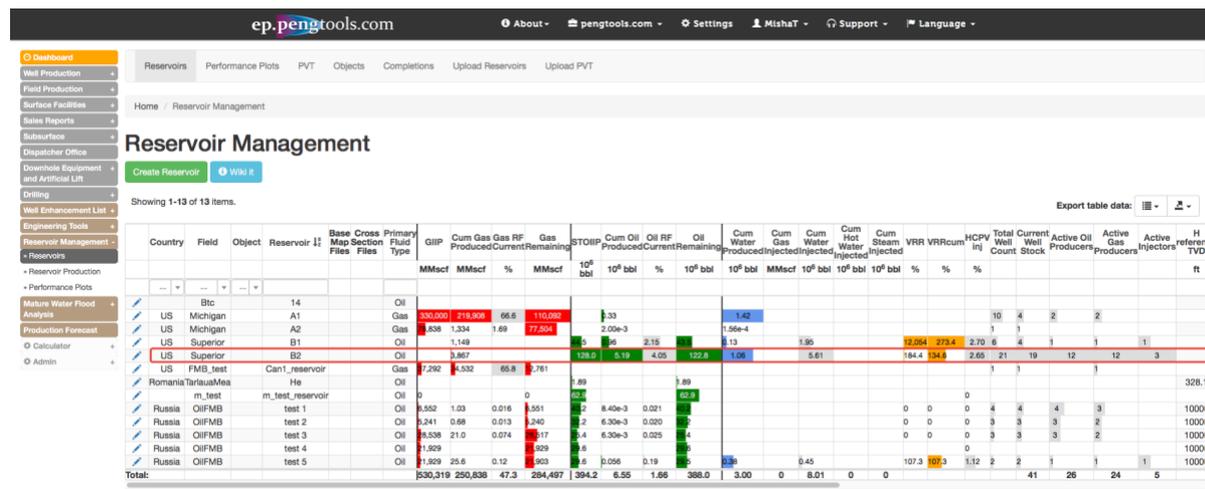


Figure 11. "B2" reservoir in the E&P Portal

Note that a number of the reservoir's parameters are automatically calculated based on the production data loaded to the system.

Creating the “B2” reservoir PVT model

In the top of the page click on the “PVT Tool” page:

Country	Field	Object	Reservoir	Base Map Files	Cross Section Files	Primary Fluid Type	GIIP	Cum Gas Produced	Gas RF Current	Gas Remaining	STOIP	Cum Oil Produced	Oil RF Current	Oil Remaining
							MMscf	MMscf	%	MMscf	10 ⁶ bbl	10 ⁶ bbl	%	10 ⁶ bbl
		Btc	14			Oil								
US	Michigan		A1			Gas	330,000	219,908	66.6	110,092		0.33		
US	Michigan		A2			Gas	1,838	1,334	1.69	77,504		2.00e-3		
US	Superior		B1			Oil		1,149			44.5	0.96	2.15	43.5
US	Superior		B2			Oil		3,867			128.0	5.19	4.05	122.8
US	FMB_test		Can1_reservoir			Gas	17,292	14,532	65.8	12,761				

Figure 12. Opening the PVT Tool in the E&P Portal

Fill the form with the given data as follows and click “Calculate”:

The “B2” reservoir PVT model is ready by now. Check the parameters plots on the “Oil”, “Gas” and “Water” tabs. Model results are available in the Output section and the results table on each page.

😊 Click “Save to cloud” to save the model.

The summary of the model parameters is given below:

Pi, psia	3262	Z	0.72
Ti, F	212	Gas Density, lbm/ft ³	21.7
SGoil	0.84 (37 API)	Bg, scf/scf	0.004218
SGgas	1.2	μgas, cP	0.043
SGwater	1	Cgas, psia-1	0.00011363713688852
Rsb, scf/bbl	1011	Water Density, lbm/ft ³	60.180592
Pb, psia	2486	Bw, bbl/bbl	1.037
Oil density, lbm/scf	41.7	μwater, cP	0.29
Bo, bbl/stb	1.651	Cw, psia-1	3.1981709184194E-6
μoil, cP	0.37		
Coil, psia-1	3.66E-6		

Table 2. "B2" reservoir PVT model results

Adding the “B2” reservoir PVT model

In the top menu open the “PVT” page of the “Reservoir Management” module:

The screenshot shows the 'PVT' page in the Reservoir Management module. The 'PVT' menu item is circled in red. Below the menu is a table with 12 items. The table has the following columns: Country, Field, Reservoir, P_i (psia), T_i (F), SG_{oil}, SG_{gas}, SG_{water}, R_{sb} (scf/bbl), P_b (psia), Oil Density (lbm/scf), Bo (bbl/bbl), μ_{oil} (cP), μ_{gas} (psia⁻¹), Z, Gas Density (lbm/ft³), B_g (scf/scf), μ_{gas} (cP), and C_g (psi).

Country	Field	Reservoir	P _i (psia)	T _i (F)	SG _{oil}	SG _{gas}	SG _{water}	R _{sb} (scf/bbl)	P _b (psia)	Oil Density (lbm/scf)	Bo (bbl/bbl)	μ _{oil} (cP)	μ _{gas} (psia ⁻¹)	Z	Gas Density (lbm/ft ³)	B _g (scf/scf)	μ _{gas} (cP)	C _g (psi)	
US	Michigan	A1	4697	199	0.78	0.58	1.04												
US	Michigan	A2	2473	123.0	0.78	0.56	1												
US	Superior	B1	3262	212	0.84	1.20	1	1011	2866	52.4	1.63	0.35	3.65e-6	0.72	21.7	4.22e-3	0.043	1.14	
US	Superior	B2	3262	212	0.84	1.20	1	1011	2486	41.7	1.65	0.37	3.66e-6	0.72	21.7	4.22e-3	0.043	1.14	
US	FMB_test	Can1_reservoir	4409	224.6		0.58	1							1					
Russia	OiIFMB	test 1	4500	140	0.88	0.65	1	280.9	1552		1.13								
Russia	OiIFMB	test 2	4500	140	0.88	0.65	1	146.7	1000	50.7	1	4.40	3.11e-6						
Russia	OiIFMB	test 3	4500	140	0.88	0.65	1	146.7	1000	50.7	1.07	4.40	3.11e-6						
Russia	OiIFMB	test 4	4500	140	0.88	0.65	1	986.3	4500	44.3	1.41	0.82	3.28e-5	0.93	14.1	3.51e-3	0.025	1.38	
Russia	OiIFMB	test 5	4500	140	0.88	0.65	1	828.5	4000	46.0	1.35	0.87	1.87e-6	0.93	14.1	3.52e-3	0.026	1.35	
Russia	OiIFMB	test 5	4500	140	0.88	0.65	1	741.5	4000	45.2	1.35	0.94	9.54e-6	0.93	14.1	3.51e-3	0.025	1.38	

Figure 13. Reservoirs PVT page of Reservoir Management module of the E&P Portal

Click “Add PVT”, fill the form as follows and click “Create”:

The screenshot shows the 'Add PVT' form in the Reservoir Management module. The form contains the following input fields:

- Field: Superior
- Reservoir: B2
- P_i (psia): 3262
- T_i (F): 212
- SG_{oil}: 0.84
- SG_{gas}: 1.2
- SG_{water}: 1
- R_{sb} (scf/bbl): 1011
- P_b (psia): 2486
- Oil Density (lbm/scf): 41.7
- Bo (bbl/bbl): 1.651
- μ_{oil} (cP): 0.37
- Coil (psia⁻¹): 3.66E-6
- Z: 0.72
- Gas Density (lbm/ft³): 21.7
- B_g (scf/scf): 0.004218
- μ_{gas} (cP): 0.043
- C_g (psi): 0.0001363713688852
- Water Density (lbm/ft³): 60.180592
- B_w (bbl/bbl): 1.037
- μ_{water} (cP): 0.29

The 'Create' button is highlighted in red.

Figure 14. Creating the PVT model in the E&P Portal

Note that PVT parameters are copied from the PVT model created on the previous step.

😊 Now you have successfully added the “B2” reservoir PVT model to the E&P Portal:

The screenshot displays the 'Reservoirs PVT' page in the E&P Portal. The page title is 'PVT' and it shows 'Showing 1-12 of 12 items'. The table contains the following data:

Country	Field	Reservoir	P psia	T F	SGoil	SGgas	SGwater	Rsb scf/bbl	Pb psia	Oil Density lbm/scf	Bo bbl/bbl	muoil cP	Coil psia ¹	Z	Gas Density lbm/ft ³	Bg scf/scf	muapp cP	Cgas psia ¹	Water Density lbm/ft ³	Bw bbl/bbl	muwater cP	Cw psia ¹	Username	Created At	Updated At
			1778	138.4	0.84	0.92	1	299.7	1323		1.13	5							1	1					
US	Michigan	A1	4697	199	0.78	0.58	1.04																Mikhail Tuzovsky	2018-02-05 16:51:35	2018-02-05 16:51:35
US	Michigan	A2	2473	123.0	0.78	0.56	1																Mikhail Tuzovsky	2017-10-04 10:53:20	2017-10-04 10:53:20
US	Superior	B1	3262	212	0.84	1.20	1	1011	2866	52.4	1.63	0.353	65e-6	0.72	21.7	4.22e-3	0.043	1.14e-4	60.2	1.04	0.29	3.20e-6	Mikhail Tuzovsky	2017-09-08 09:51:46	2018-04-11 07:54:25
US	Superior	B2	3262	212	0.84	1.20	1	1011	2486	41.7	1.65	0.373	66e-6	0.72	21.7	4.22e-3	0.043	1.14e-4	60.2	1.04	0.29	3.20e-6	Mikhail Tuzovsky	2017-08-14 12:20:15	2018-04-11 07:54:19
US	FMB_test	Cam1_reservoir	4409	224.6		0.58	1				1.13														
		rt_test	3821	140	0.85	0.65	1	280.9	1552																
Russia	OIFMB	test 1	4500	140	0.88	0.65	1	146.7	1000	50.7	1	4.403	1.1e-6			3.51e-3			62.2	1.00	0.47	2.77e-6	E&P Portal	2018-03-22 07:17:43	2018-04-04 03:50:42
Russia	OIFMB	test 2	4500	140	0.88	0.65	1	146.7	1000	50.7	1.07	4.403	1.1e-6			3.51e-3			62.2	1.00	0.47	2.77e-6	E&P Portal	2018-03-29 04:13:30	2018-04-02 10:54:03
Russia	OIFMB	test 3	4500	140	0.88	0.65	1	596.3	4500	44.3	1.41	0.823	35e-5	0.93	14.1	3.51e-3	0.025	1.38e-4	62.2	1.00	0.47	2.77e-6	E&P Portal	2018-03-29 08:11:23	2018-04-02 11:51:50
Russia	OIFMB	test 4	4500	140	0.88	0.65	1	828.5	4000	46.0	1.35	0.87	1.87e-5	0.93	14.1	3.52e-3	0.026	1.35e-4	61.7	1.01	0.51	2.78e-6	Mikhail Tuzovsky	2018-04-03 09:32:01	2018-04-03 09:32:01
Russia	OIFMB	test 5	4500	140	0.88	0.65	1	741.5	4000	45.2	1.35	0.949	54e-6	0.93	14.1	3.51e-3	0.025	1.38e-4	62.2	1.00	0.47	2.77e-6	Mikhail Tuzovsky	2018-04-10 05:54:54	2018-04-10 05:54:54

Figure 15. Reservoirs PVT page of Reservoir Management module of the E&P Portal

Adding the well “8”

In the left menu open the “Well” page of the “Subsurface” module:

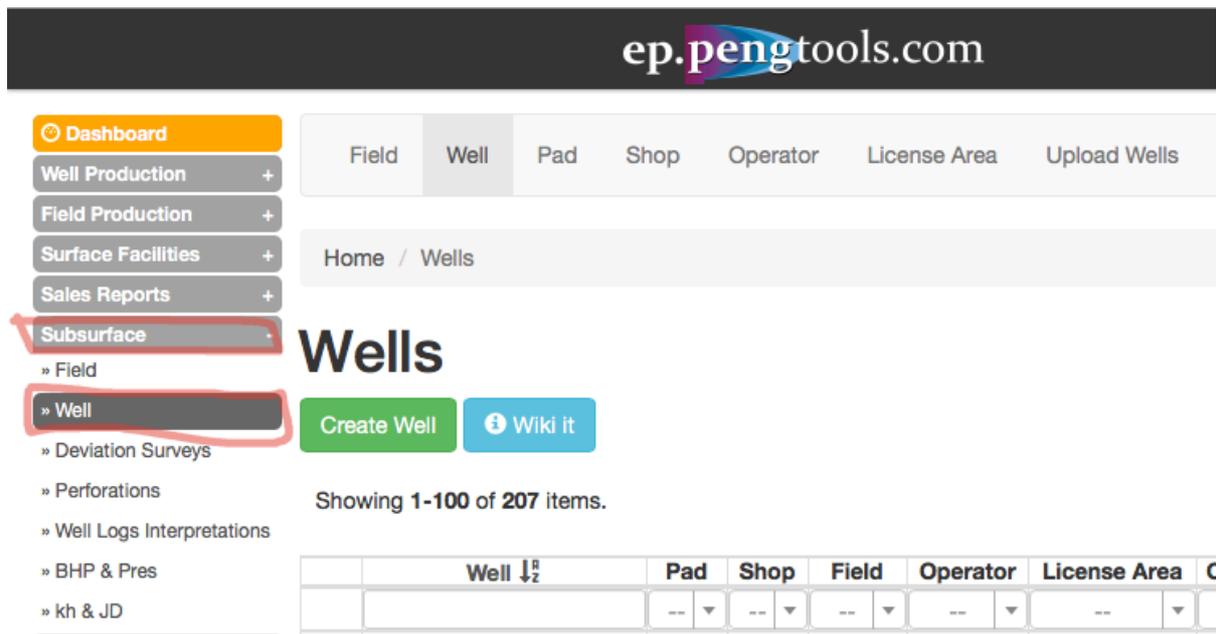


Figure 16. Well page of Subsurface module of the E&P Portal

Click “Create Well”, fill the form as follows and click “Create”:

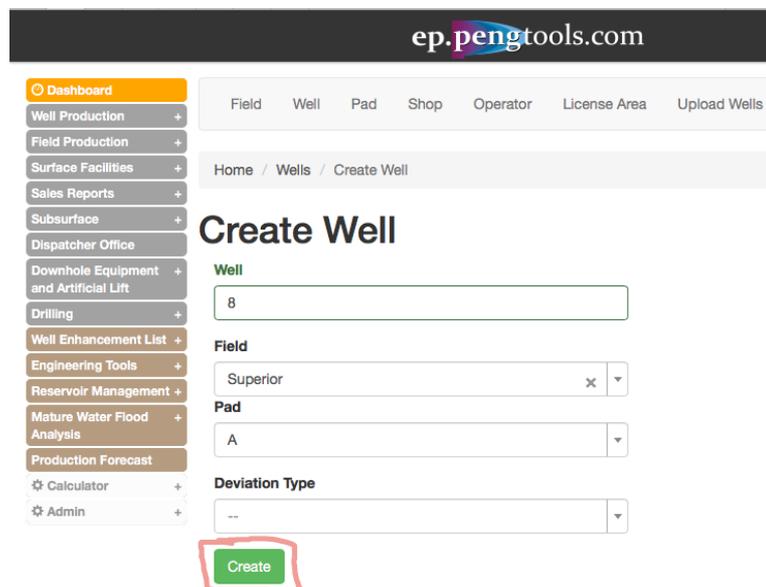


Figure 17. Creating the well “8” in the E&P Portal



Now you have successfully added well “8” to the **E&P Portal**:

The screenshot shows the 'Wells' section of the E&P Portal. The table below displays the data for two wells. The second well, '8', is highlighted in red.

Well	Pad	Shop	Field	Operator	License Area	Country	Well Type	Status	Status Type	Deviation Type	Operation Type	Username	Created At	Updated At
8			Superior	Big Oil Co		US	Injector	Change	Change		Periodic ESP	E&P Portal	2017-08-30 08:24:52+00	2017-08-30 08:24:52+00
8	A		Superior	Big Oil Co		US	Producer	Change	Change		Periodic ESP	E&P Portal	2017-08-30 08:24:52+00	2017-08-30 08:24:52+00

Figure 18. Well "8" in the E&P Portal

Adding the well “8” perforations

In the left menu open the “Perforations” page of the “Subsurface” module:

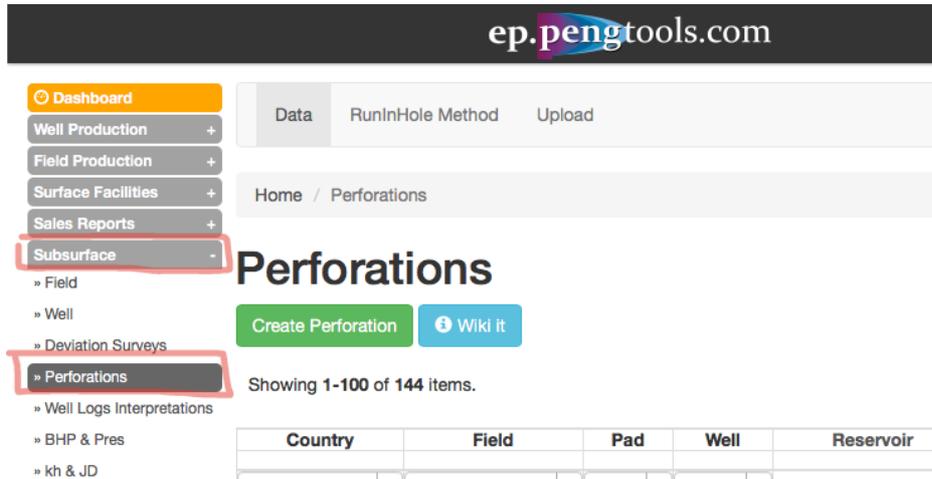


Figure 19. Perforations page of Subsurface module of the E&P Portal

Click “Create Perforation”, fill the form as follows and click “Create”:

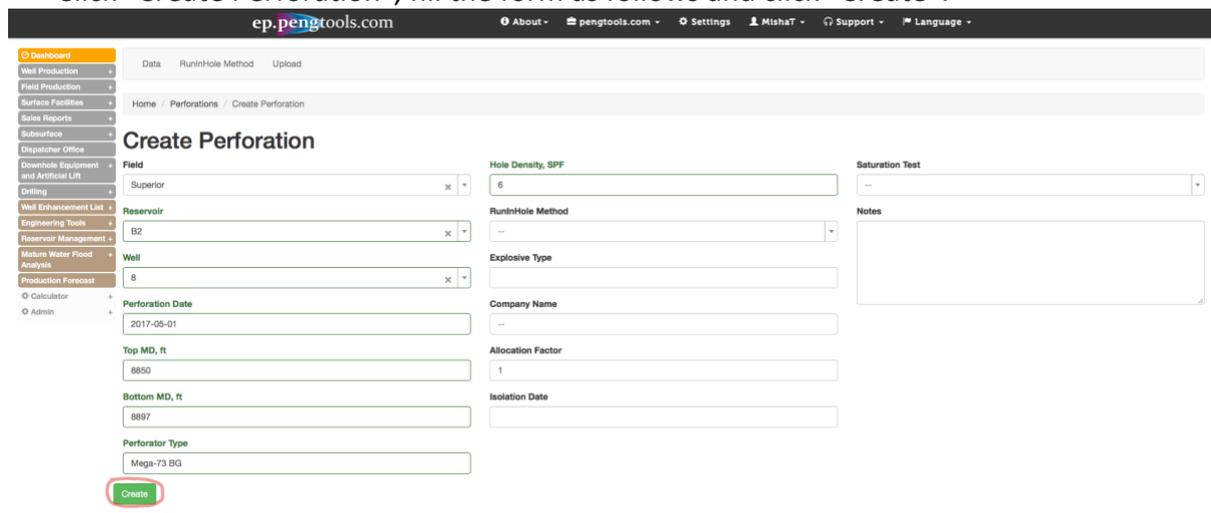


Figure 20. Creating the well “8” perforations in the E&P Portal

😊 Now you have successfully added well “8” perforations to the E&P Portal:

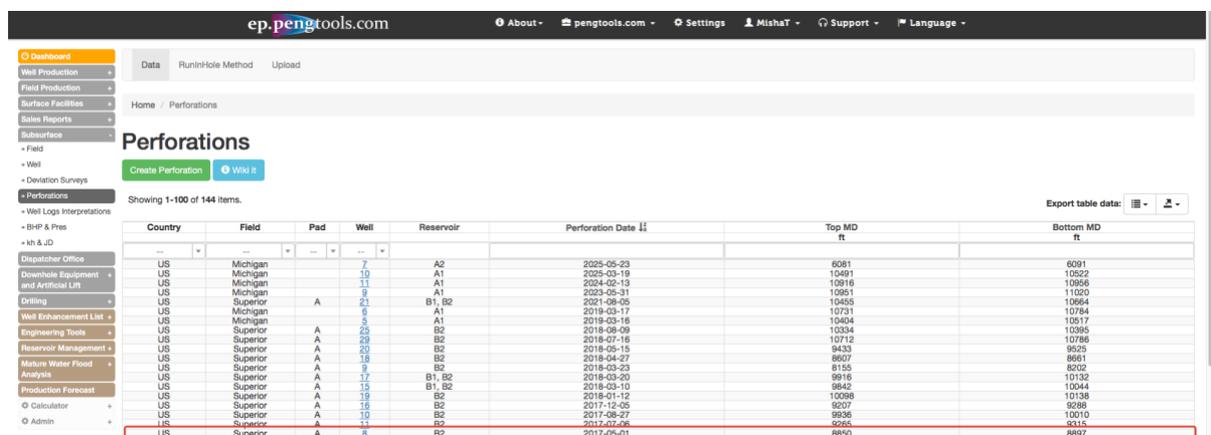


Figure 21. Well “8” perforations in the E&P Portal

Adding the well “8” kh and JD

In the left menu open the “kh & JD” page of the “Subsurface” module:

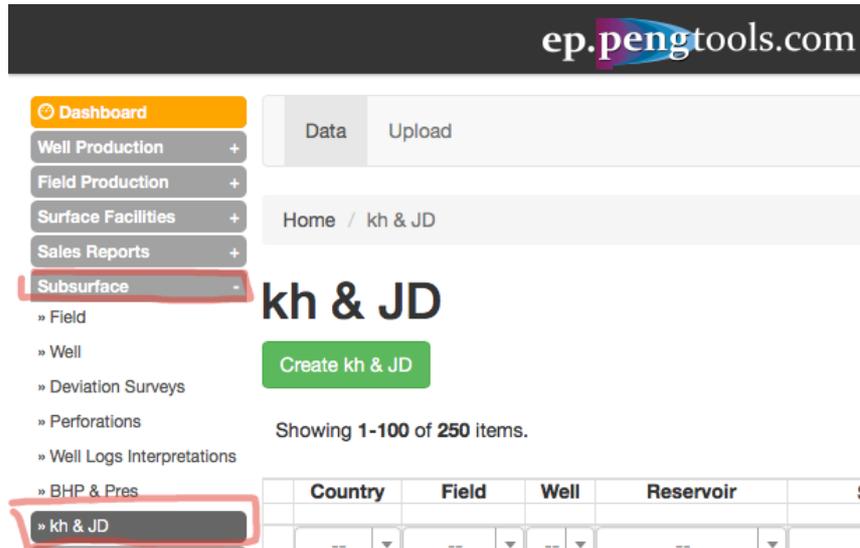


Figure 22. kh & JD page of Subsurface module of the E&P Portal

Click “Create Perforation”, fill the form as follows and click “Create”:

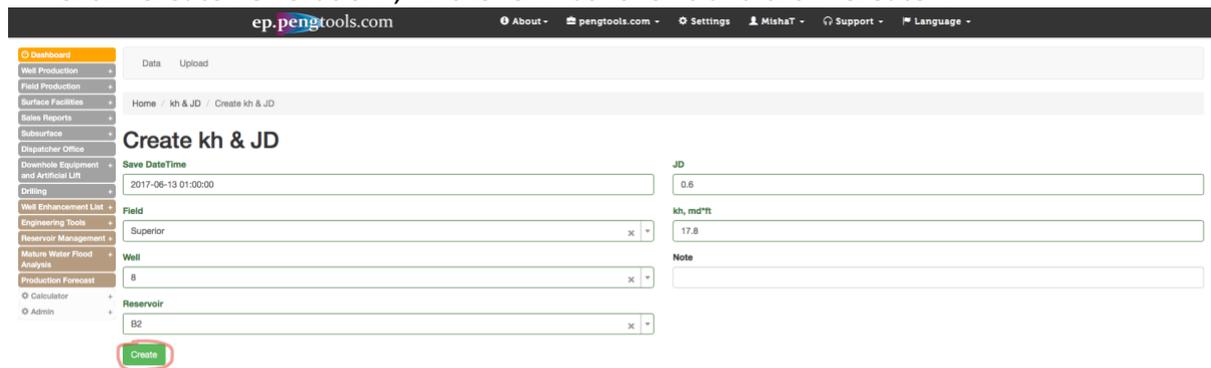


Figure 23. Creating the well “8” kh and JD in the E&P Portal



Now you have successfully added well “8” kh & JD to the E&P Portal:

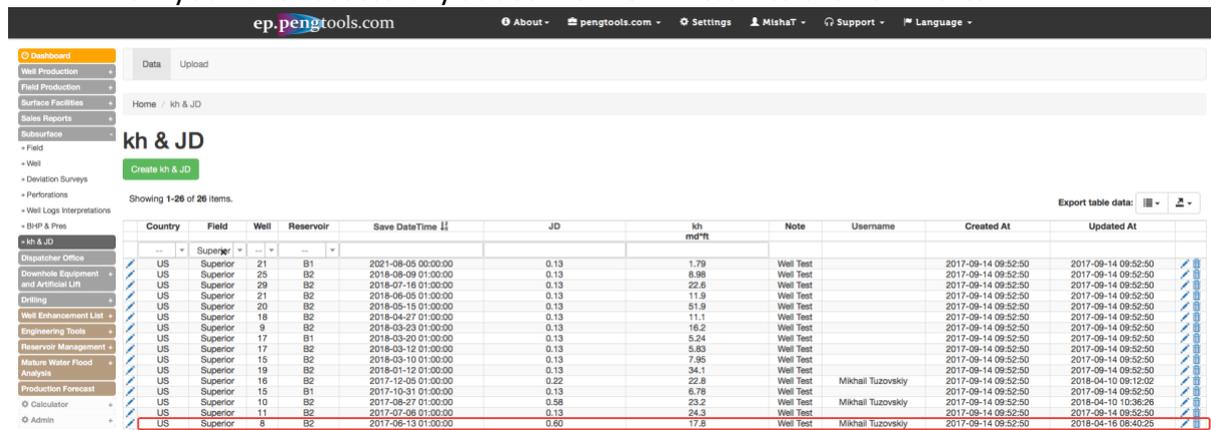


Figure 24. Well “8” kh & JD in the E&P Portal

Upload the well “8” daily production data

In the left menu open the “Daily Data” page of the “Well Production” module:

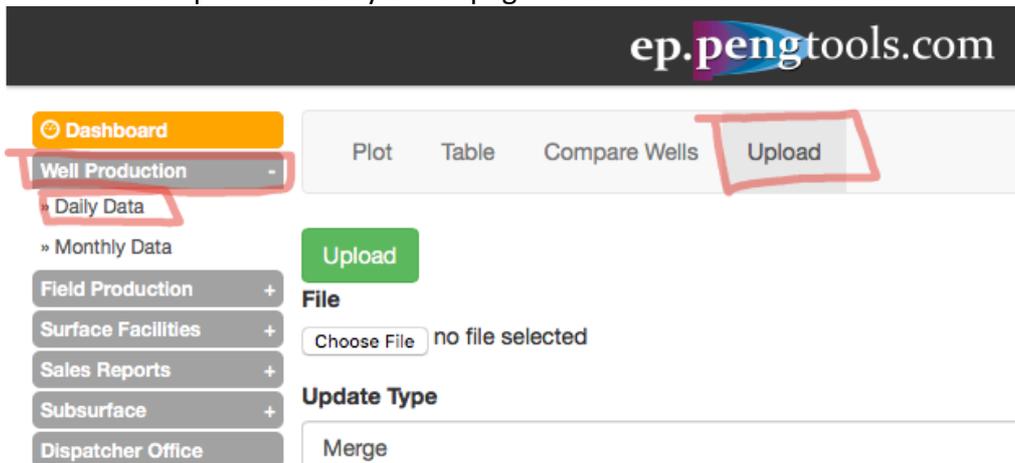


Figure 25. Wells daily data upload page of the E&P Portal

Fill the form as follows and click “Upload”:

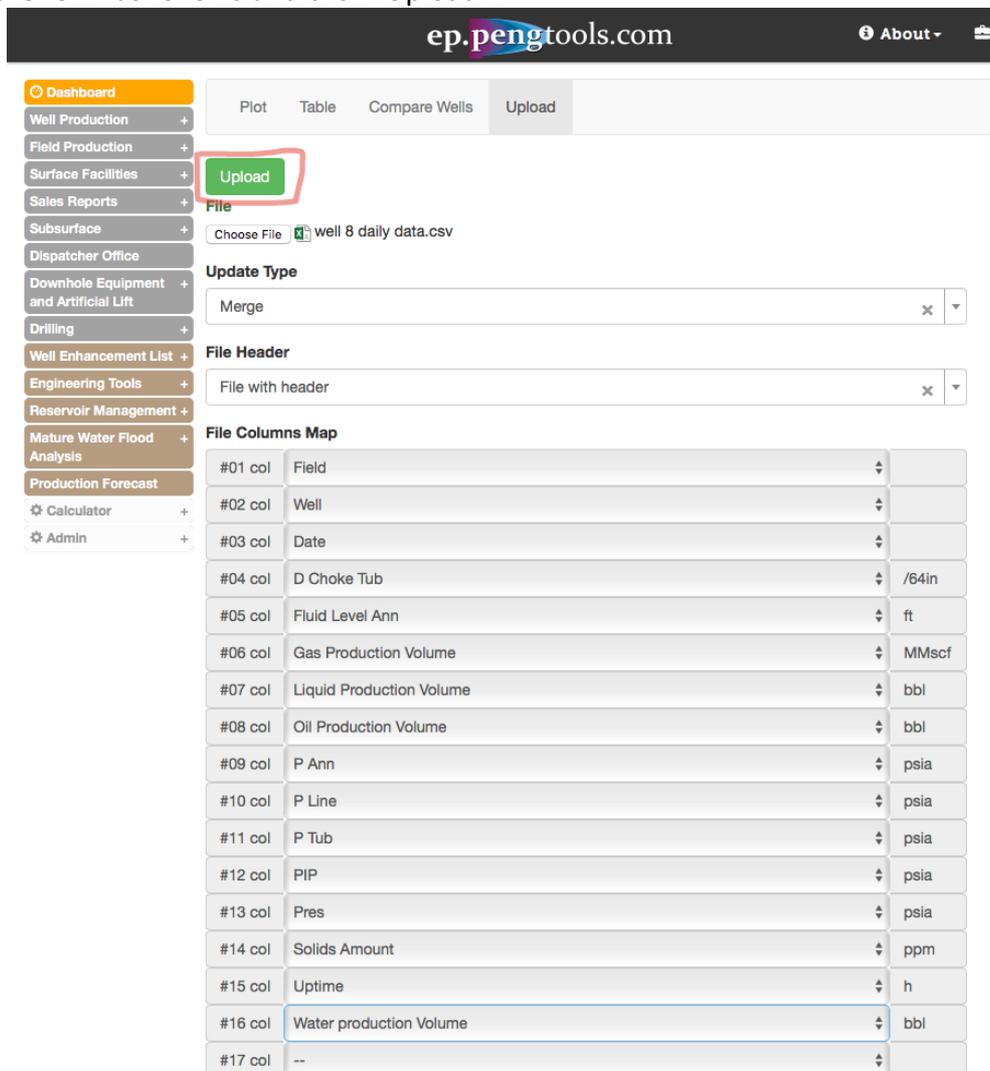


Figure 26. Well “8” daily data upload to the E&P Portal

Wait for the message showing the data upload status:

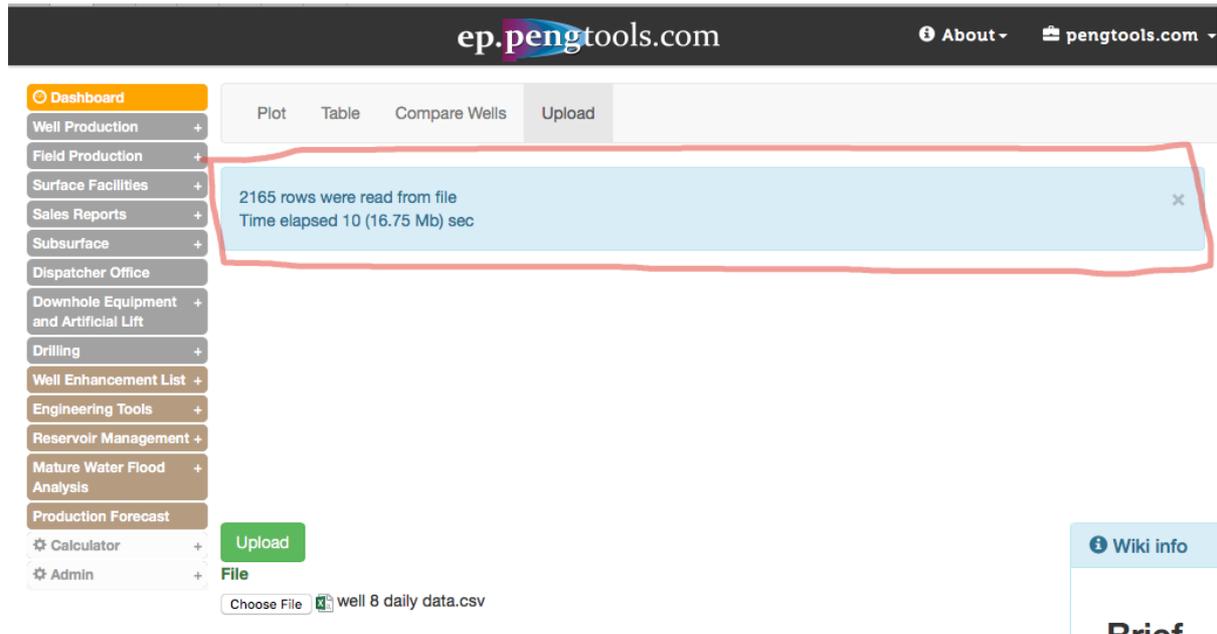


Figure 27. Well “8” daily data upload status message

😊 Now you have successfully uploaded the well “8” daily data to the **E&P Portal**:

Let’s visually inspect the data uploaded. In the top menu click the “Plot”. Fill the filter as follows and click “Search”:

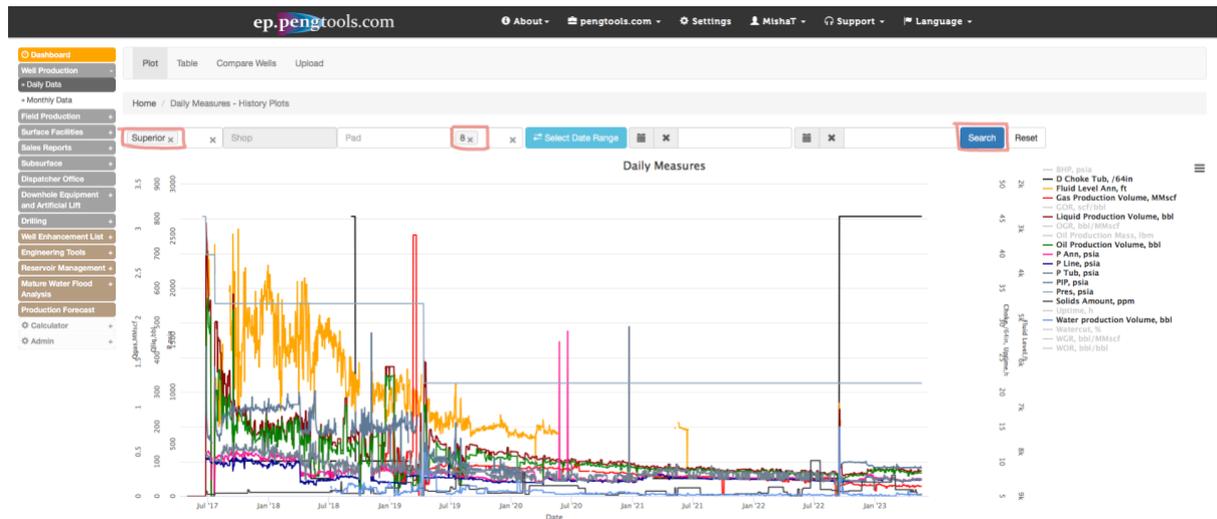


Figure 28. Well “8” daily data visualization

Adding the well “8” casing design

In the left menu open the “Well Design” page of the “Drilling” module:

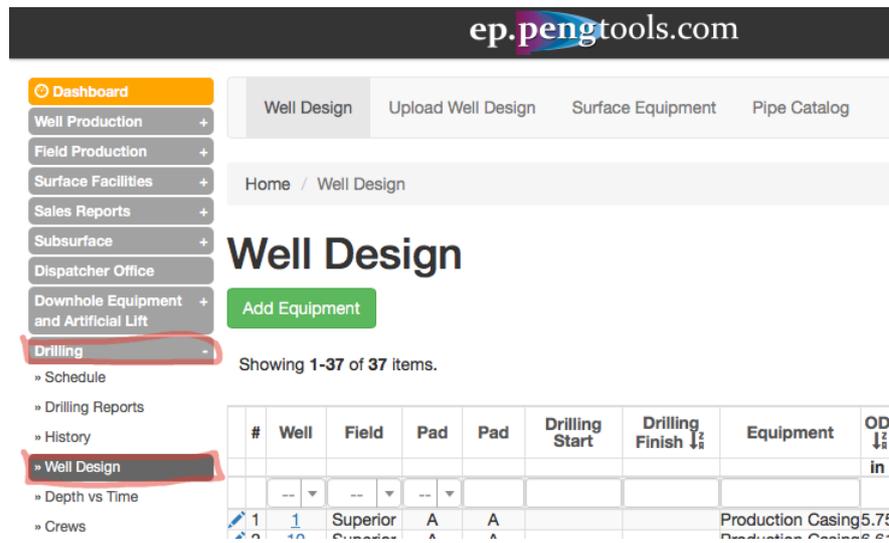


Figure 29. Well Design page of the Drilling module of the E&P Portal

Adding the Conductor: Click “Add Equipment”, fill the form as follows and click “Create”:

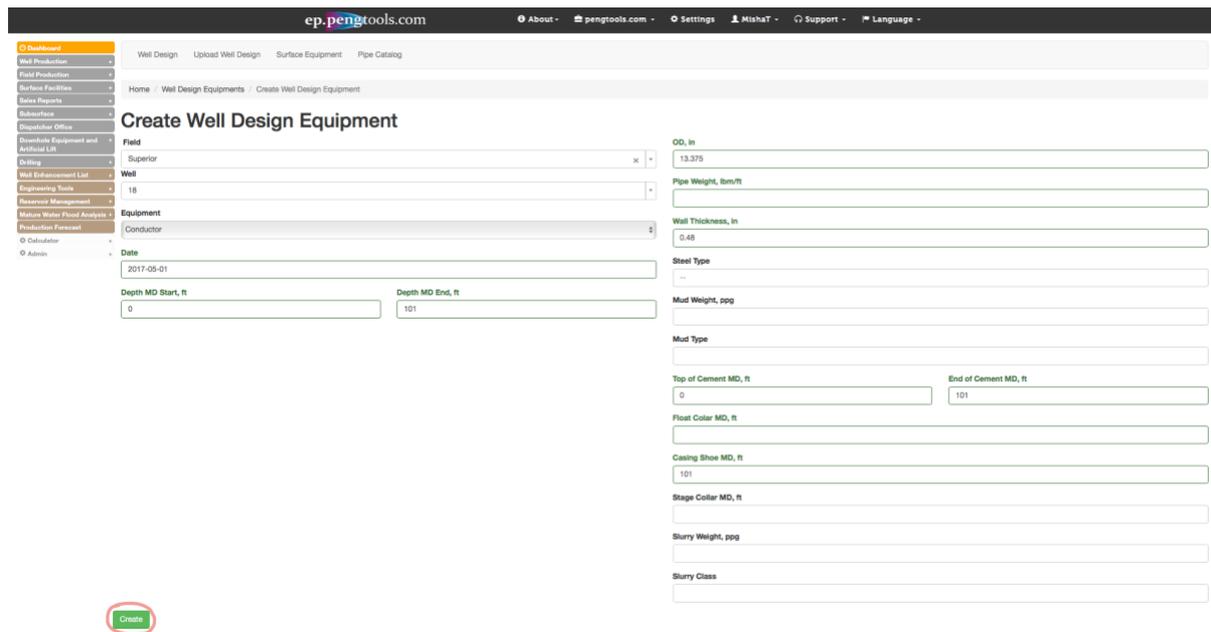


Figure 30. Creating Well “8” conductor in the E&P Portal

Adding the Surface casing: Click “Add Equipment”, fill the form as follows and click “Create”:

Figure 31. Creating Well "8" surface casing in the E&P Portal

Adding the Production casing: Click "Add Equipment", fill the form as follows and click "Create":

Figure 32. Creating Well "8" production casing in the E&P Portal



Now you have successfully added well "8" casing design to the **E&P Portal**:

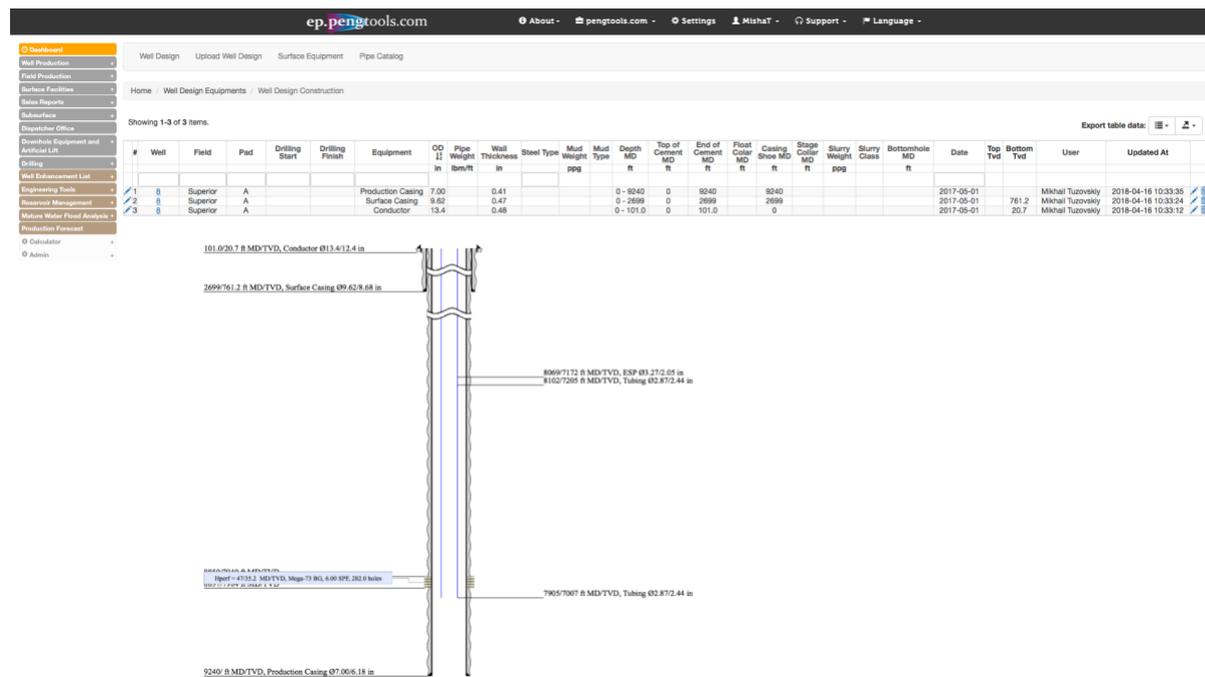


Figure 33. Well "8" schematic in the E&P Portal

Adding the well “8” downhole equipment

In the left menu open the “Downhole Equipment” page of the “Downhole Equipment and Artificial Lift” module:

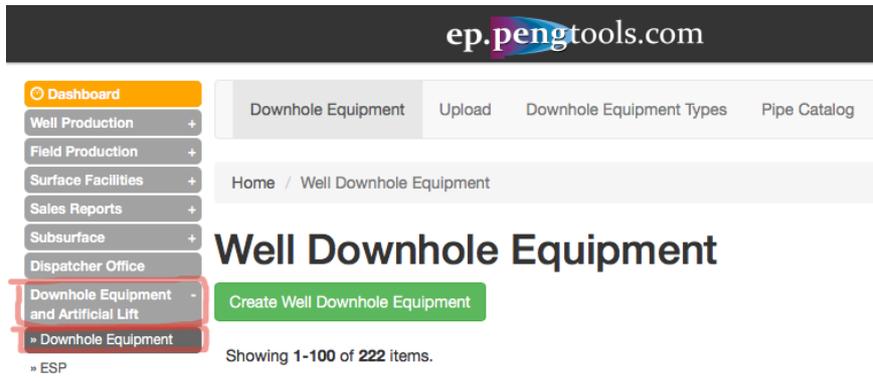


Figure 34. Well Downhole Equipment page of the Downhole Equipment and Artificial Lift module of the E&P Portal

Click “Create Well Downhole Equipment”, fill the form as follows and click “Create”:

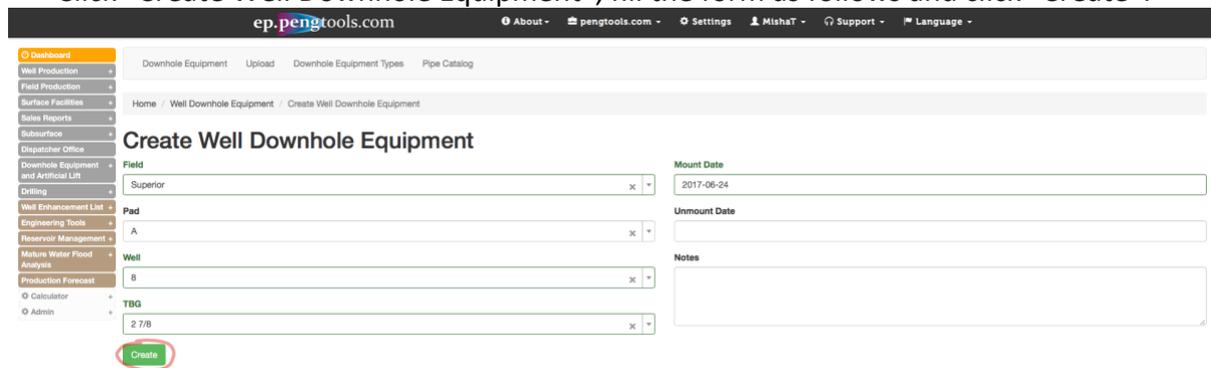


Figure 35. Creating the well “8” downhole equipment in the E&P Portal

Next click on the “well name” to define the completion string elements:

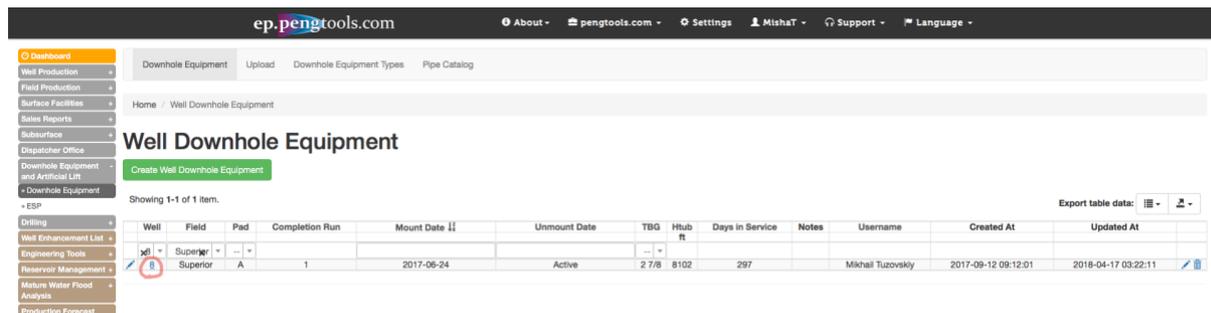


Figure 36. Well “8” downhole equipment in the E&P Portal

Click “Add Well Downhole Equipment Element”:

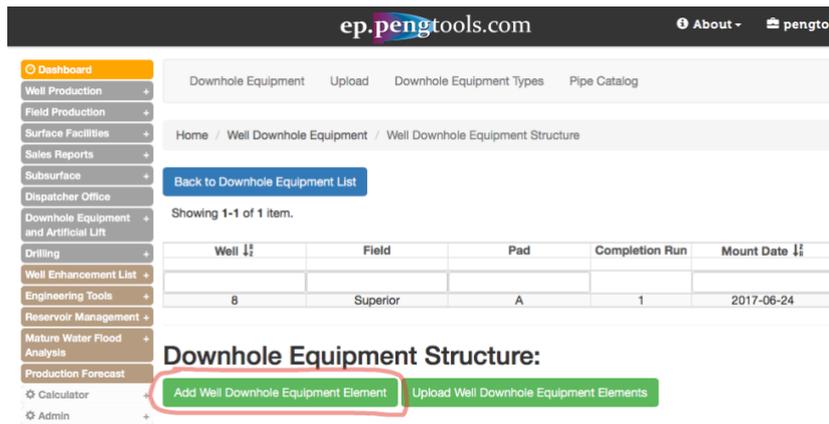


Figure 37. Adding well “8” Completion string elements in the E&P Portal

Add the first part of the completion string: Fill the form as follows and click “Create”:

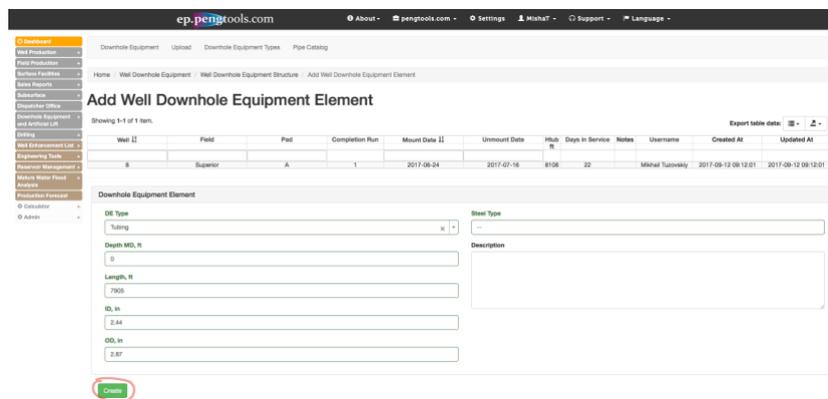


Figure 38. Adding well “8” tubing top in the E&P Portal

Add the ESP: Fill the form as follows and click “Create”:

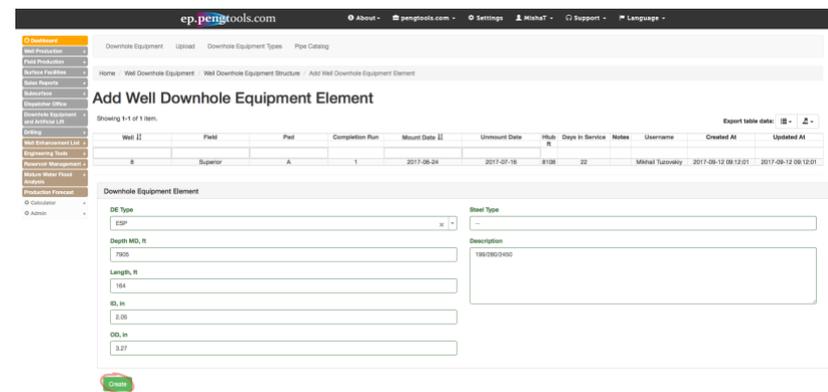


Figure 39. Adding well “8” ESP in the E&P Portal

Add the last part of the completion string: Fill the form as follows and click “Create”:

ep.pengtools.com

Dashboard | Downhole Equipment | Upload | Downhole Equipment Types | Pipe Catalog

Home / Well Downhole Equipment / Well Downhole Equipment Structure

Add Well Downhole Equipment Element

Showing 1-1 of 1 item.

Well ID	Field	Pad	Completion Run	Mount Date	Unmount Date	TBG	Htub	Days in Service	Notes	Username	Created At	Updated At
8	Superior	A	1	2017-06-24						Mikhail Tuzovsky	2017-09-12 09:12:01	2018-04-17 03:22:11

Export table data: [icon] [icon]

Downhole Equipment Element

DE Type: Tubing

Depth MD, ft: 8069

Length, ft: 32.8

ID, in: 2.44

OD, in: 2.87

Steel Type: [dropdown]

Description: [text area]

[Create]

Figure 40. Adding well “8” tubing bottom in the E&P Portal



Now you have successfully added well “8” downhole equipment to the **E&P Portal**:

ep.pengtools.com

Dashboard | Downhole Equipment | Upload | Downhole Equipment Types | Pipe Catalog

Home / Well Downhole Equipment / Well Downhole Equipment Structure

Back to Downhole Equipment List

Showing 1-1 of 1 item.

Well ID	Field	Pad	Completion Run	Mount Date	Unmount Date	TBG	Htub	Days in Service	Notes	Username	Created At	Updated At
8	Superior	A	1	2017-06-24						Mikhail Tuzovsky	2017-09-12 09:12:01	2018-04-17 03:22:11

Export table data: [icon] [icon]

Downhole Equipment Structure:

Add Well Downhole Equipment Element | Upload Well Downhole Equipment Elements

Showing 1-3 of 3 items.

N	DE Type	Depth MD ft	Length ft	Down to MD	ID in	OD in	Steel Type	Description	Username	Created At	Updated At
1	Tubing	0	7905	7905	2.44	2.87			Mikhail Tuzovsky	2017-09-12 10:35:15	2018-04-17 03:09:17
2	ESP	7905	164.0	8069	2.05	3.27		199/280/2450	Mikhail Tuzovsky	2017-09-12 10:35:15	2018-04-17 03:09:52
3	Tubing	8069	32.8	8102	2.44	2.87			Mikhail Tuzovsky	2017-09-12 10:38:15	2018-04-17 03:37:22

Figure 41. Well “8” downhole equipment elements in the E&P Portal

ep.pengtools.com

Dashboard | Downhole Equipment | Upload | Downhole Equipment Types | Pipe Catalog

Home / Well Downhole Equipment

Well Downhole Equipment

Create Well Downhole Equipment

Showing 1-1 of 1 item.

Well	Field	Pad	Completion Run	Mount Date	Unmount Date	TBG	Htub	Days in Service	Notes	Username	Created At	Updated At
8	Superior	A	1	2017-06-24						Mikhail Tuzovsky	2017-09-12 09:12:01	2018-04-17 03:22:11

Export table data: [icon] [icon]

Figure 42. Well “8” downhole equipment in the E&P Portal

Calculating the well “8” flowing bottomhole pressure

In the left menu open the “BHP Calculation” page of the “Calculator” module.

Fill the filter as follows² and click “Search”.

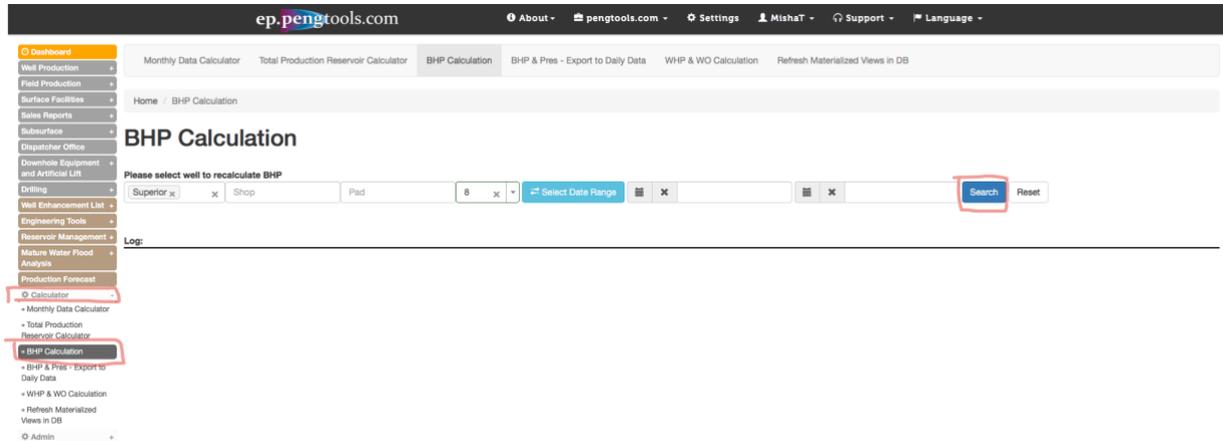


Figure 43. BHP Calculator page in the E&P Portal

Inspect the BHP calculation results in the results table:

#	Field	Well	DM Date	Primary Fluid Type	Well Operation Type	Gas Production MMcuf	Liquid Production Vol bbl	Oil Production Vol bbl	Water Production Vol bbl	Pub	Pann	PIP	Tub	Tann	Reservoir Temperature F	Fluid Level Ann MD ft	Fluid Level Tub MD ft	Tubing Depth MD	Perforation top MD	Perforation top TVD	DCasing	Tubing ID	Tubing OD	E Pipe	E Casing	Pressure Type	Measure Type	Pressure Calculation Method	Calculated BHP psia	Issues
201	Superior	8	2017-11-17	Oil	ESP	188.7	163.8	426.2 398.8 837.7	212	5239	4968	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
202	Superior	8	2017-11-18	Oil	ESP	215.1	186.7	426.2 398.8 837.7	212	5545	4840	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1094	Success			
203	Superior	8	2017-11-19	Oil	ESP	215.1	186.7	426.2 398.8 837.7	212	4826	4201	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
204	Superior	8	2017-11-20	Oil	ESP	218.9	190.0	440.9 398.8 837.7	212	5292	4716	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
205	Superior	8	2017-11-21	Oil	ESP	218.9	190.0	440.9 398.8 837.7	212	5912	5203	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
206	Superior	8	2017-11-22	Oil	ESP	177.4	154.0	440.9 410.2 881.8	212	4402	3978	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1153	Success			
207	Superior	8	2017-11-23	Oil	ESP	177.4	161.0	485.0 411.5 881.8	212	5774	5109	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1153	Success			
208	Superior	8	2017-11-24	Oil	ESP	177.4	161.0	470.3 408.8 881.8	212	4789	5081	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1153	Success			
209	Superior	8	2017-11-25	Oil	ESP	177.4	161.0	455.6 405.8 837.7	212	5187	5188	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
210	Superior	8	2017-11-26	Oil	ESP	177.4	161.0	455.6 401.2 852.4	212	4787	4294	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
211	Superior	8	2017-11-27	Oil	ESP	177.4	161.0	440.9 398.8 852.4	212	5292	4716	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
212	Superior	8	2017-11-28	Oil	ESP	177.4	161.0	440.9 390.3 837.7	212	5666	5024	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
213	Superior	8	2017-11-29	Oil	ESP	181.1	164.5	440.9 398.8 852.4	212	5709	5081	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
214	Superior	8	2017-11-30	Oil	ESP	179.9	163.3	426.2 398.8 852.4	212	5715	5081	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
215	Superior	8	2017-12-01	Oil	ESP	184.9	187.9	426.2 395.2 852.4	212	5715	5081	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
216	Superior	8	2017-12-02	Oil	ESP	184.9	187.9	426.2 395.2 852.4	212	4865	4865	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
217	Superior	8	2017-12-03	Oil	ESP	184.9	187.9	426.2 390.3 852.4	212	6109	5401	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			
218	Superior	8	2017-12-04	Oil	ESP	184.9	187.9	411.5 378.1 837.7	212	5728	5081	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
219	Superior	8	2017-12-05	Oil	ESP	181.1	184.5	455.6 373.3 823.0	212	5094	4967	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1094	Success			
220	Superior	8	2017-12-06	Oil	ESP	206.3	187.3	411.5 377.7 837.7	212	5331	4744	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
221	Superior	8	2017-12-07	Oil	ESP	201.3	182.8	440.9 301.3 837.7	212	4583	4121	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
222	Superior	8	2017-12-08	Oil	ESP	206.3	187.3	411.5 364.5 837.7	212	4577	4121	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
223	Superior	8	2017-12-09	Oil	ESP	200.0	181.6	411.5 368.8 837.7	212	4954	4437	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
224	Superior	8	2017-12-10	Oil	ESP	193.2	173.6	411.5 354.5 837.0	212	4452	4205	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1084	Success			
225	Superior	8	2017-12-11	Oil	ESP	217.6	197.6	382.1 348.8 823.0	212	4350	3949	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1084	Success			
226	Superior	8	2017-12-12	Oil	ESP	217.6	197.6	396.8 358.6 808.3	212	5387	4801	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1079	Success			
227	Superior	8	2017-12-13	Oil	ESP	215.1	195.3	573.1 371.8 837.7	212	4907	4437	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
228	Superior	8	2017-12-14	Oil	ESP	215.1	195.3	396.8 358.6 793.6	212	5341	4772	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1063	Success			
229	Superior	8	2017-12-15	Oil	ESP	186.2	188.1	396.8 367.8 837.7	212	4525	4054	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
230	Superior	8	2017-12-16	Oil	ESP	186.2	188.1	426.2 373.3 823.0	212	4507	4121	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1064	Success			
231	Superior	8	2017-12-17	Oil	ESP	186.2	188.1	382.1 357.1 823.0	212	4485	4054	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1094	Success			
232	Superior	8	2017-12-18	Oil	ESP	187.4	170.2	454.1 355.8 811.2	212	4600	4150	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1094	Success			
233	Superior	8	2017-12-19	Oil	ESP	127.7	115.9	514.4 355.8 811.2	212	4288	3863	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1182	Success			
234	Superior	8	2017-12-20	Oil	ESP	127.7	115.9	440.9 367.8 837.7	212	4250	3949	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1109	Success			
235	Superior	8	2017-12-21	Oil	ESP	176.1	159.9	440.9 367.8 852.4	212	4170	3776	8102	7205	8850	7949	6.18	2.44	2.87	not used	not used	Flowing	Calculated	PIP + pho	g	h	1124	Success			

Figure 44. BHP Calculator results table in the E&P Portal

Export the calculated BHP to the daily measures.

In the left menu open the “BHP & Pres - Export to Daily Data” page of the “Calculator” module. Fill the filter as follows and click “Calculate”.

² Then dates filters left empty the calculator processes all the well history

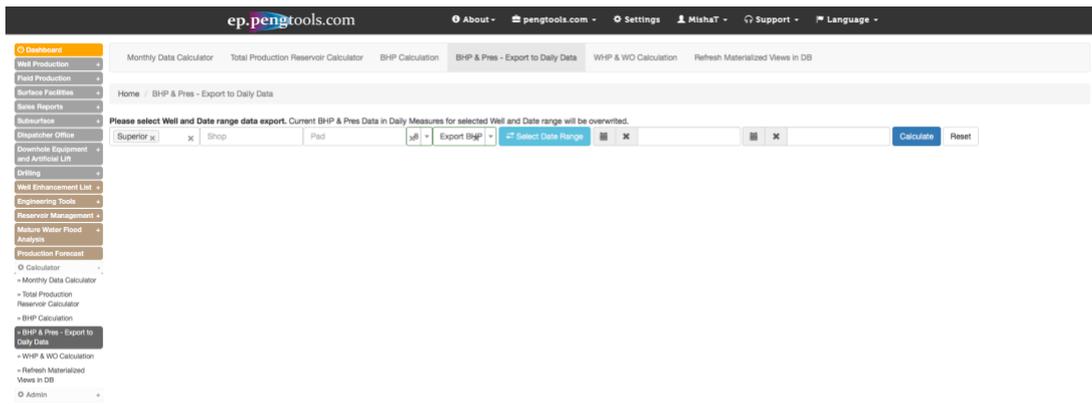


Figure 45. Export Calculated BHP to Daily Measures in the E&P Portal

Inspect the export results:

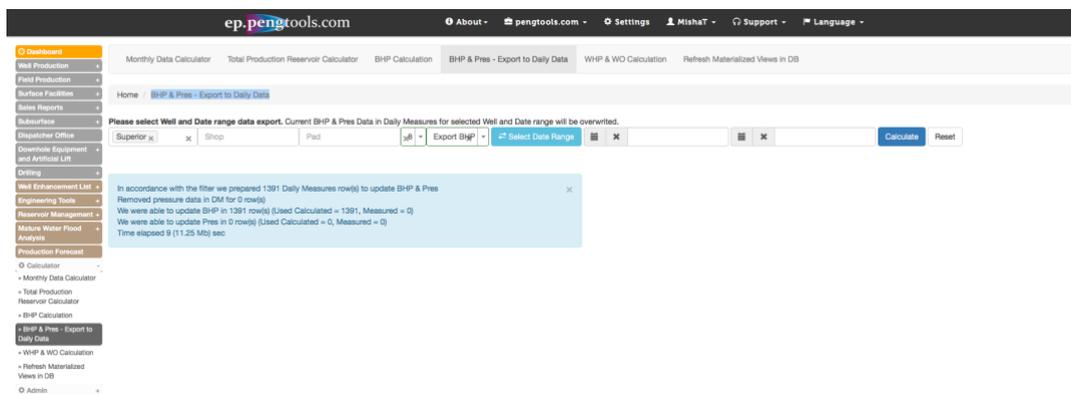


Figure 46. Calculated BHP export to Daily Measures results in the E&P Portal

In the left menu open the Daily Data Plot to visualize the calculated BHP values:

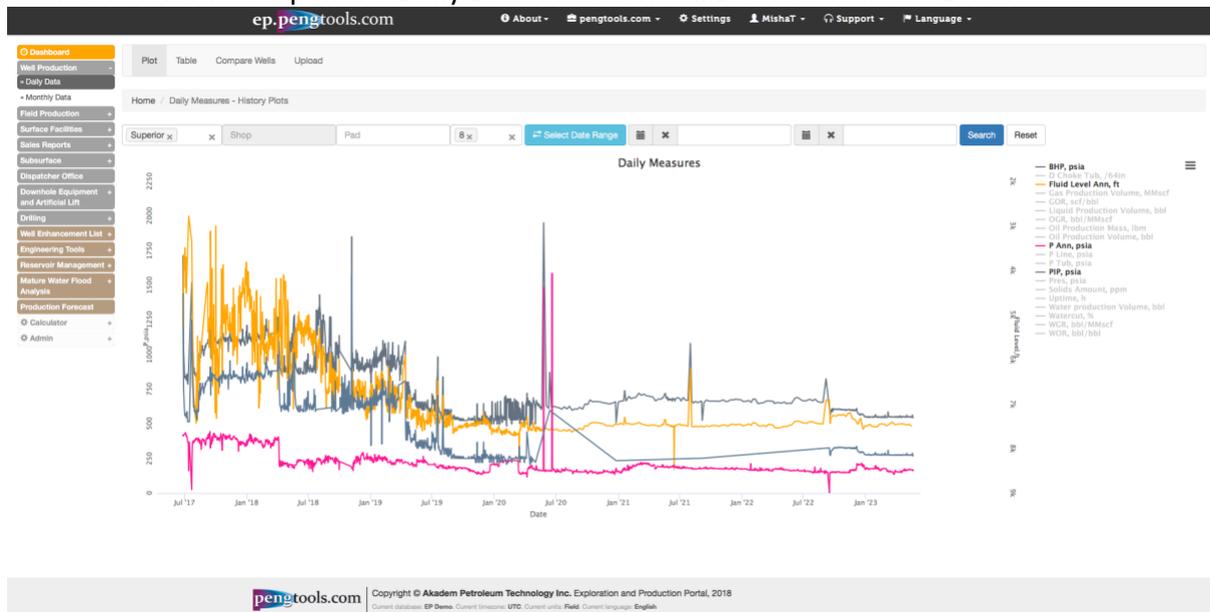


Figure 47. Well "8" Daily Data Plot with the Calculated BHP



Now you have successfully calculated the well "8" flowing bottomhole pressure in the E&P Portal

Applying the Oil FMB

Opening the Oil FMB tool

In the left menu open the “Oil FMB” page of the “Engineering Tools” module.
Fill the filter as follows and click “Submit”.

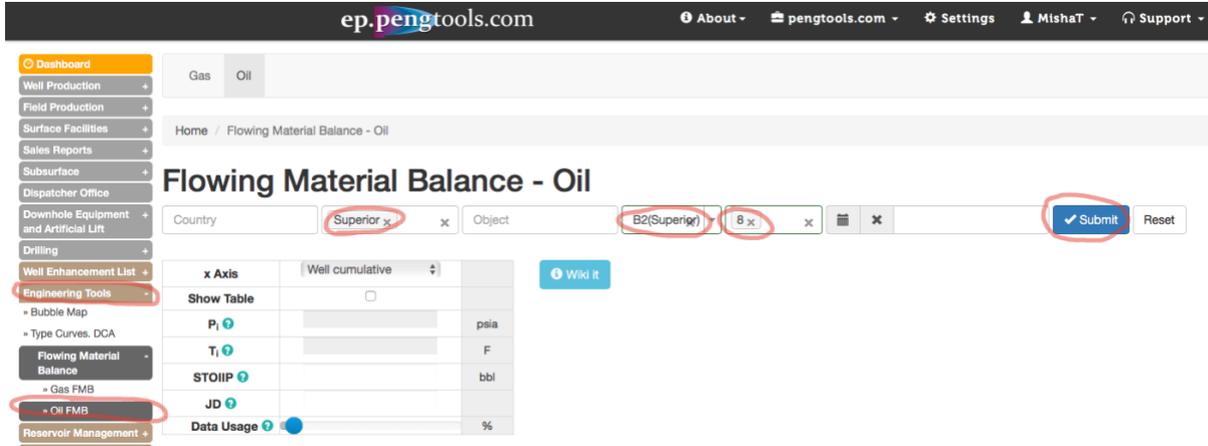


Figure 48. Oil Flowing Material Balance in the E&P Portal

Inspect the **Oil FMB** Results. Note that STOIP and JD correspond to the input data.
Also note that oil FMB model (red and gray curves) doesn't match the well's data points.

This means that well “8” is draining only a part of the reservoir “B2” reserves and the post frac report **JD** of **0.6** is over estimated.

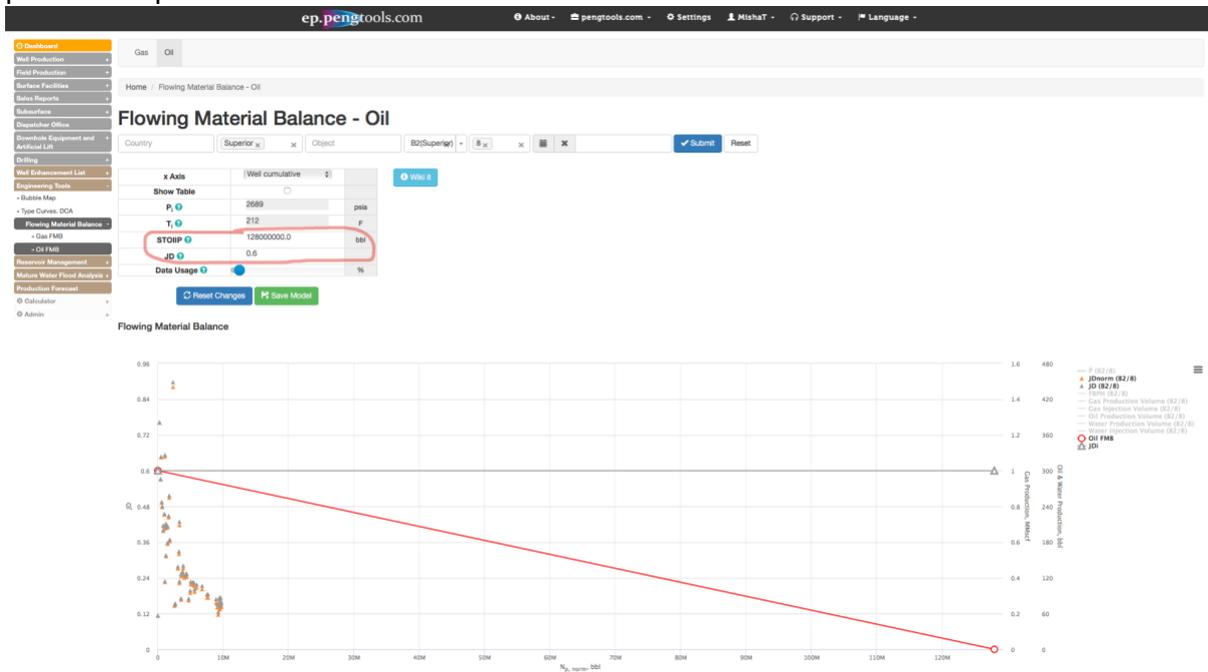


Figure 49. Well “8” Oil FMB in the E&P Portal

😊 Now well “8” oil FMB model is ready to be matched with the well data to find the actual well's **STOIP** and **JD**.

Matching the well "8" Oil FMB model

To increase details

First STOIIP should be reduced. Drag and drop the red line end point to the 10M.

Flowing Material Balance

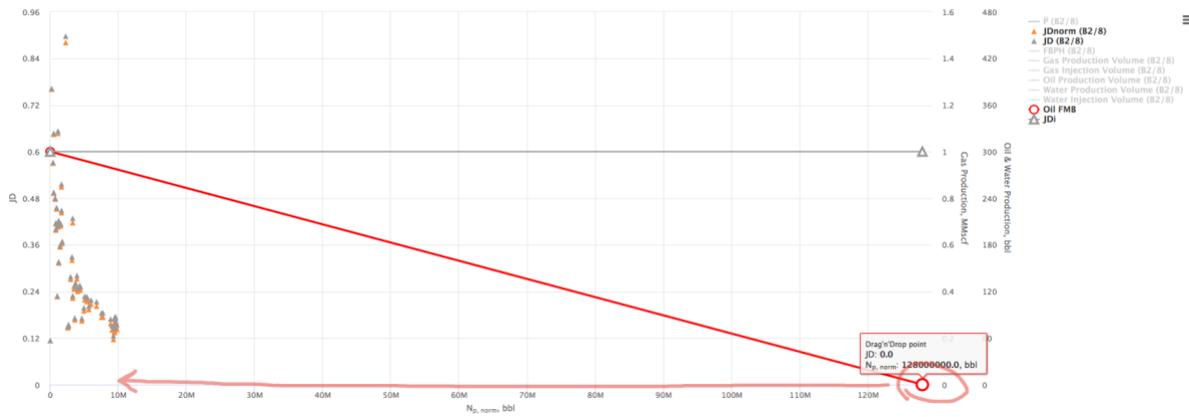


Figure 50. Well "8" Oil FMB changing the STOIIP to 10M

Inspect the Oil FMB plot with STOIIP = 10M bbl:

Flowing Material Balance

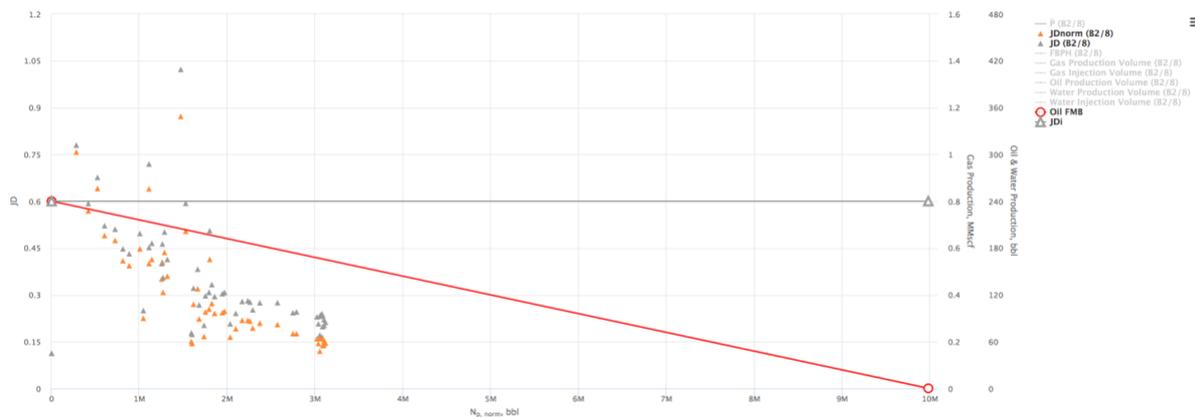


Figure 51. Well "8" Oil FMB STOIIP = 10M

At this step change the "Data Usage" to 100% in the model inputs to increase the details of the plot:

ep.pengtools.com

Gas Oil

Home / Flowing Material Balance - Oil

Flowing Material Balance - Oil

Country: Superior x Object: B

x Axis	Well cumulative	
Show Table	<input type="checkbox"/>	
P _i	2689	psia
T _i	212	F
STOIIP	9985149.1	bbl
JD	0.6	
Data Usage	<input checked="" type="radio"/>	%

Reset Changes Save Model

Flowing Material Balance

Figure 52. Changing the Data Usage of the Oil FMB plot in the E&P Portal

Inspect the Oil FMB plot with STOIIP = 10M bbl and increased data usage:

Flowing Material Balance

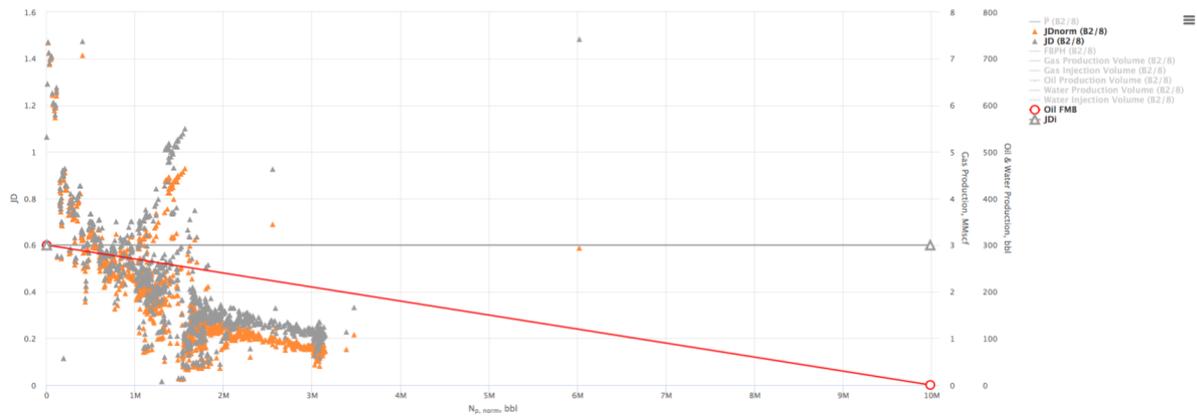


Figure 53. Well "8" Oil FMB STOIIP = 10M and data usage = 100%

STOIIP should be reduced further. Drag and drop the red line end point to the 3M.

Flowing Material Balance

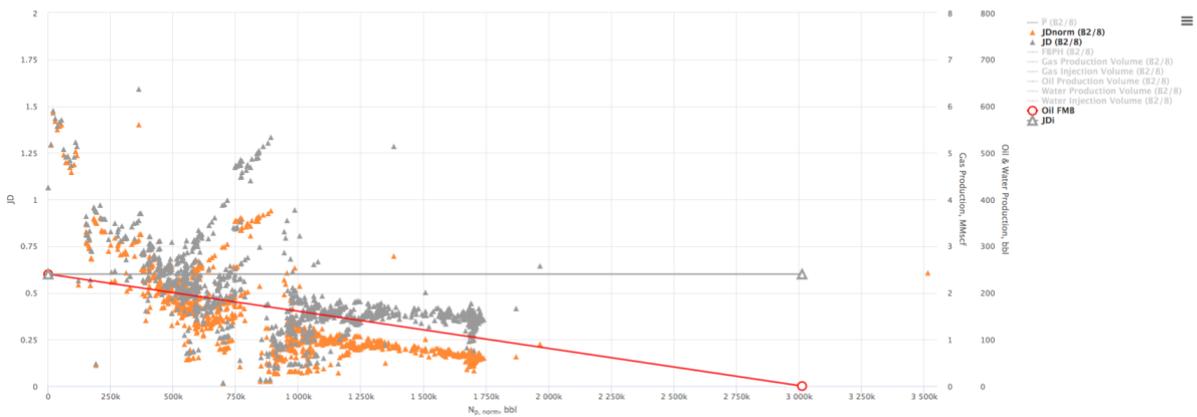


Figure 54. Well "8" Oil FMB STOIIP = 3M

STOIIP should be reduced further. Drag and drop the red line end point to the 2M.

Flowing Material Balance

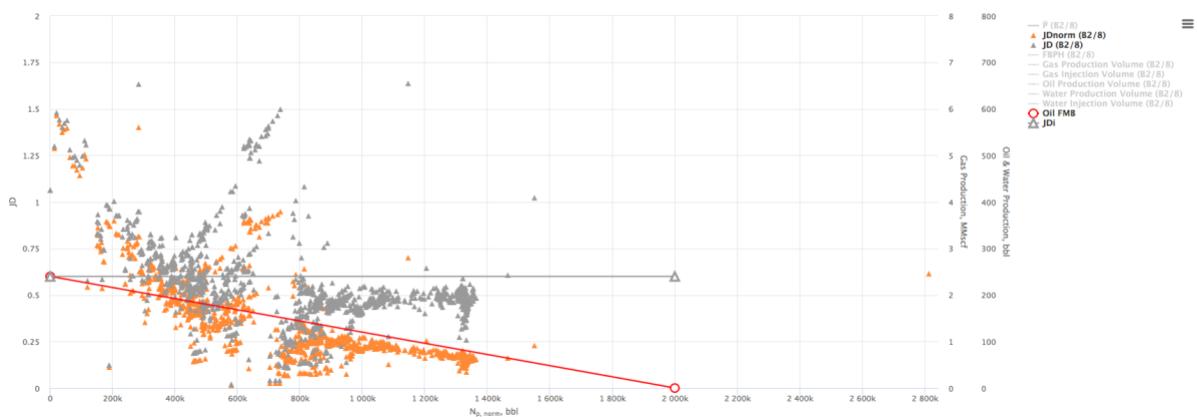


Figure 55. Well "8" Oil FMB STOIIP = 2M

Next JD should be reduced. Drag and drop the gray line end point to match the gray points:

Flowing Material Balance

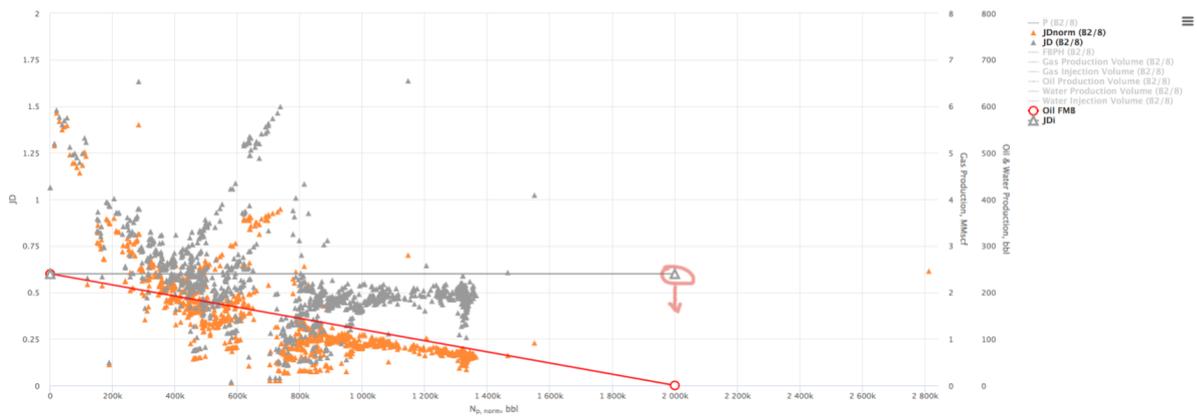


Figure 56. Well "8" Oil FMB changing the JD to 0.5

Inspect how the current Oil FMB model matches the well data:

Flowing Material Balance

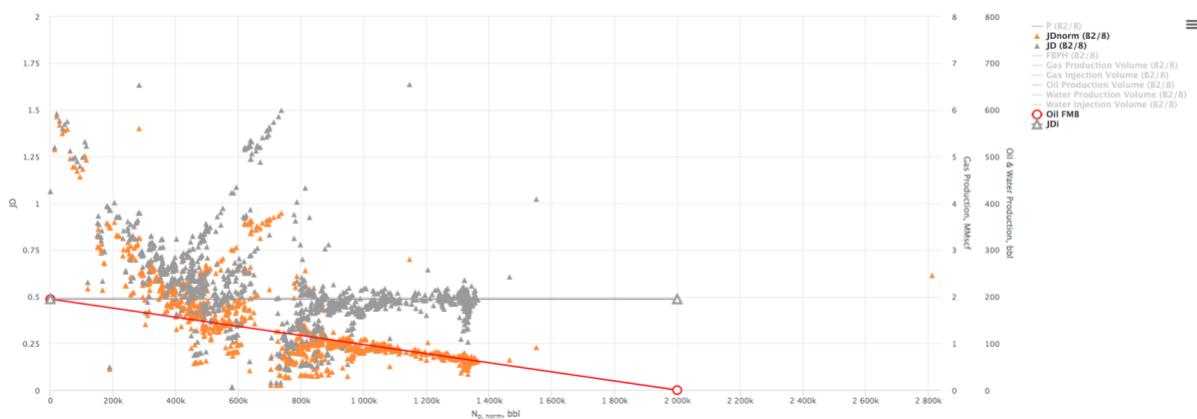


Figure 57. Well "8" Oil FMB matched model



Now well "8" oil FMB model is matched and the results are:

STOIIP = 2 mln bbl

JD = 0.5

Saving and exporting the analysis results Saving the well "8" Oil FMB model

Click "Save Model":

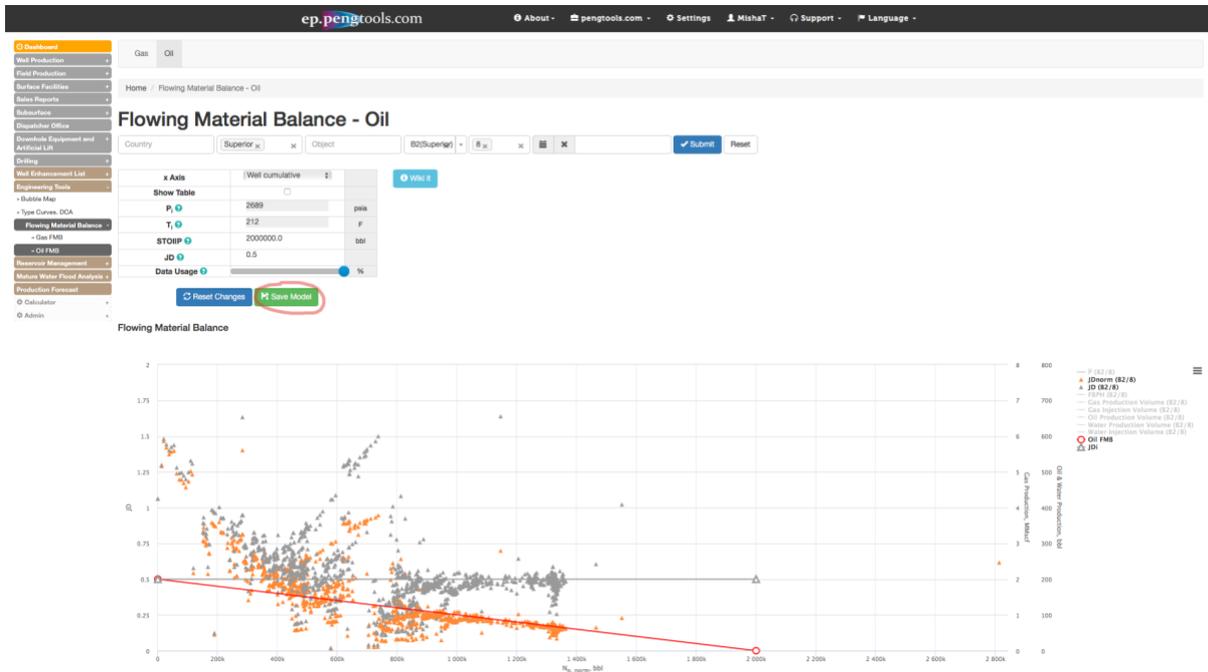


Figure 58. Saving the well "8" Oil FMB matched model

The dialog confirms that the model was saved:

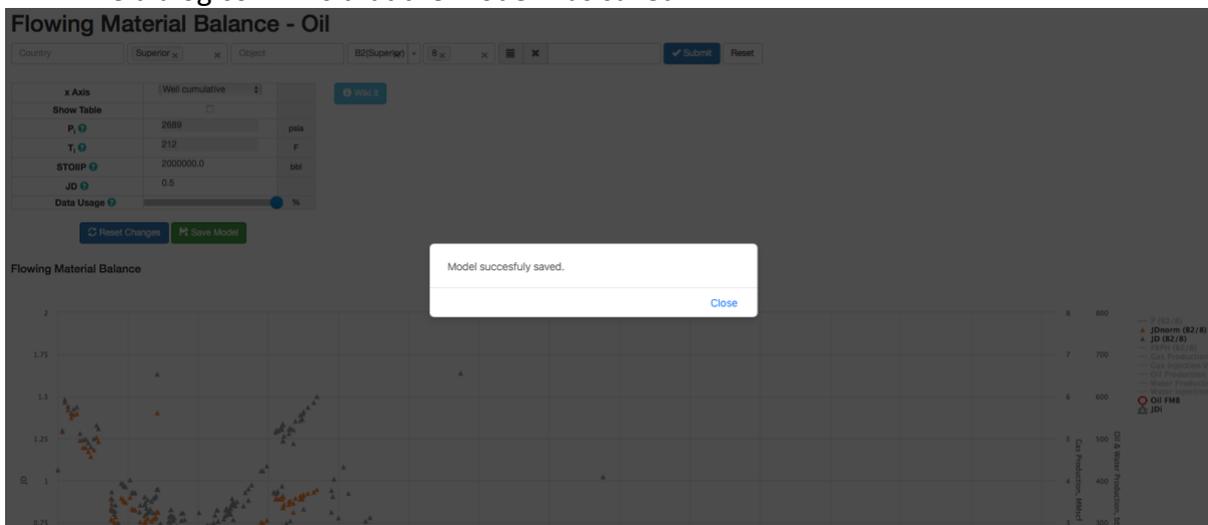


Figure 59. Saving Oil FMB model dialog

😊 Now well "8" oil FMB model is saved to the E&P Portal database.

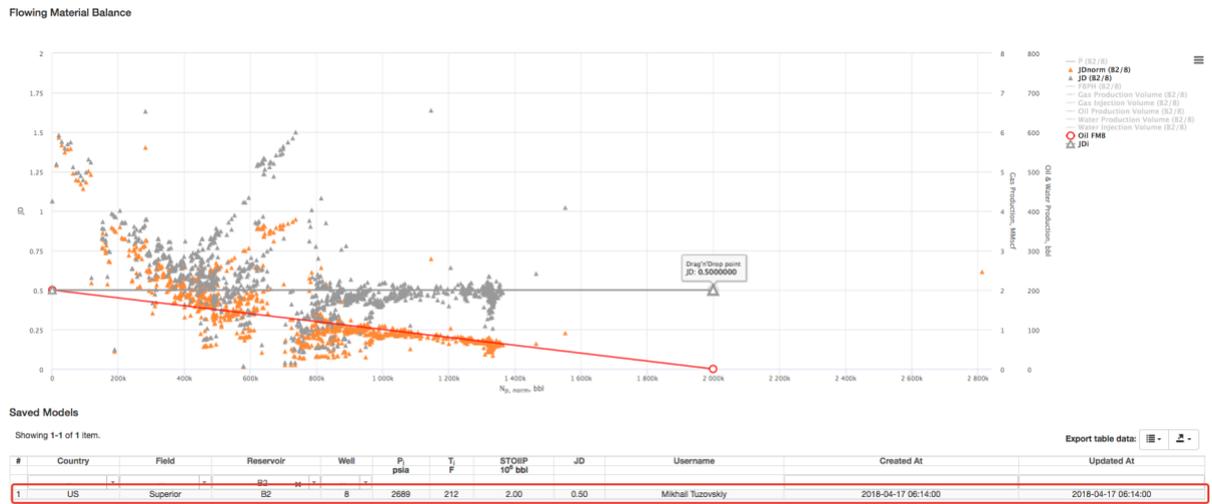


Figure 60. Saved well "8" Oil FMB model in the table

Exporting the well “8” Oil FMB model

Check the “Show Table” select box in the model inputs and click “Submit”.

Figure 61. Selecting the Oil FMB table for output

Scroll below the main Plot to see the calculation results table:

Country	Field	Well	Reservoir	Date	Q _o bbl	N _o bbl	Q _g MMscf	Q _w MMscf	Q _{o-g} MMscf	W _i bbl	STOIP 10 ⁶ bbl	B _o bbl/bbl	B _{o,acc} bbl/bbl	μ _o cp	μ _{o,acc} cp	kh md/ft	J _D bbl/D	J _{D,init} bbl/D	P _i psia	F psia	FBHP psia	Ppo(P) psia	Ppo(F) psia	Ppo(BHP) psia	APoo psia	J bbl/D/psia	N _{o,rem} bbl	J _{D,rem} bbl/D	JD Issue Solution
US	Superior	8	B0	2017-11-17	163.3	36265	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2425	1109	2528	2226	2009.8	1618	0.10	379189	0.48	0.57
US	Superior	8	B0	2017-11-18	186.7	35813	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2426	1084	2528	2225	2009.8	1618	0.11	370277	0.52	0.64
US	Superior	8	B0	2017-11-19	186.7	36000	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2424	1109	2528	2224	2009.8	1618	0.12	375126	0.53	0.65
US	Superior	8	B0	2017-11-20	190.9	36190	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2423	1109	2528	2223	2009.8	1618	0.12	375124	0.53	0.65
US	Superior	8	B0	2017-11-21	190.9	36380	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2422	1109	2528	2223	2009.8	1618	0.12	377112	0.53	0.65
US	Superior	8	B0	2017-11-22	154.3	35534	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2422	1153	2528	2222	2009.8	1618	0.12	367628	0.44	0.55
US	Superior	8	B0	2017-11-23	161.0	36695	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2421	1153	2528	2221	2009.8	1618	0.10	368796	0.47	0.58
US	Superior	8	B0	2017-11-24	161.0	36865	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2420	1153	2528	2221	2009.8	1618	0.10	368628	0.47	0.58
US	Superior	8	B0	2017-11-25	161.0	37017	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2420	1109	2528	2220	2009.8	1618	0.10	360413	0.45	0.55
US	Superior	8	B0	2017-11-26	161.0	37178	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2399	1124	2528	2219	2009.8	1618	0.10	364548	0.46	0.57
US	Superior	8	B0	2017-11-27	161.0	37339	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2399	1124	2528	2219	2009.8	1618	0.10	365386	0.46	0.57
US	Superior	8	B0	2017-11-28	163.3	37523	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2397	1124	2528	2217	2009.8	1618	0.10	367927	0.46	0.58
US	Superior	8	B0	2017-11-29	164.3	37654	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2397	1124	2528	2217	2009.8	1618	0.10	367927	0.47	0.58
US	Superior	8	B0	2017-12-01	167.9	38164	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2396	1124	2528	2216	2009.8	1618	0.10	369927	0.46	0.58
US	Superior	8	B0	2017-12-03	167.9	38331	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2395	1124	2528	2214	2009.8	1618	0.10	369538	0.48	0.59
US	Superior	8	B0	2017-12-04	167.9	38499	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2394	1109	2528	2214	2009.8	1618	0.10	369543	0.47	0.59
US	Superior	8	B0	2017-12-05	164.3	38664	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2393	1094	2528	2213	2009.8	1618	0.10	369573	0.46	0.57
US	Superior	8	B0	2017-12-06	167.9	38851	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2393	1109	2528	2212	2009.8	1618	0.10	369942	0.53	0.66
US	Superior	8	B0	2017-12-07	162.8	39034	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2392	1109	2528	2212	2009.8	1618	0.11	369776	0.51	0.64
US	Superior	8	B0	2017-12-08	167.9	39221	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2391	1109	2528	2211	2009.8	1618	0.10	369942	0.53	0.66
US	Superior	8	B0	2017-12-09	161.8	39403	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2391	1109	2528	2210	2009.8	1618	0.10	369954	0.51	0.64
US	Superior	8	B0	2017-12-10	173.8	39778	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2389	1094	2528	2209	2009.8	1618	0.10	369184	0.48	0.60
US	Superior	8	B0	2017-12-11	167.9	39974	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2389	1094	2528	2209	2009.8	1618	0.10	369184	0.48	0.60
US	Superior	8	B0	2017-12-12	167.9	40167	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2388	1109	2528	2207	2009.8	1618	0.12	369525	0.55	0.69
US	Superior	8	B0	2017-12-13	169.3	40362	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2388	1094	2528	2207	2009.8	1618	0.12	369525	0.55	0.69
US	Superior	8	B0	2017-12-14	169.3	40551	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2388	1109	2528	2205	2009.8	1618	0.10	369363	0.48	0.59
US	Superior	8	B0	2017-12-15	169.3	40700	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2386	1094	2528	2205	2009.8	1618	0.10	369215	0.47	0.59
US	Superior	8	B0	2017-12-16	169.3	40859	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2386	1094	2528	2205	2009.8	1618	0.10	369215	0.47	0.59
US	Superior	8	B0	2017-12-17	169.3	40989	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2385	1094	2528	2204	2009.8	1618	0.10	369659	0.47	0.59
US	Superior	8	B0	2017-12-18	170.3	41040	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2384	1094	2528	2203	2009.8	1618	0.10	369707	0.46	0.59
US	Superior	8	B0	2017-12-19	115.3	41190	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2384	1182	2528	2203	2009.8	1618	0.07	369627	0.34	0.43
US	Superior	8	B0	2017-12-20	115.3	41272	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2383	1109	2528	2202	2009.8	1618	0.07	402095	0.33	0.41
US	Superior	8	B0	2017-12-21	115.3	41431	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2383	1124	2528	2202	2009.8	1618	0.10	406376	0.45	0.57
US	Superior	8	B0	2017-12-22	191.9	41623	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2382	1094	2528	2201	2009.8	1618	0.10	404029	0.54	0.67
US	Superior	8	B0	2017-12-23	197.9	41811	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2381	1094	2528	2200	2009.8	1618	0.11	401388	0.52	0.65
US	Superior	8	B0	2017-12-24	209.2	42017	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2381	1079	2528	2199	2009.8	1618	0.13	396970	0.57	0.71
US	Superior	8	B0	2017-12-25	231.4	42248	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2380	1094	2528	2198	2009.8	1618	0.14	403503	0.65	0.81
US	Superior	8	B0	2017-12-26	170.2	42419	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50	2669	2379	1094	2528	2198	2009.8	1618	0.10	397603	0.47	0.58
US	Superior	8	B0	2017-12-27	162.8	42681	0	0	0	10.4	2	1.66	1.64	0.35	0.35	17.8	0.80	0.50											

Export table data:

	Ppo(Pi) psia	Ppo(P̄) psia	Ppo(BHP) psia	ΔPpo psia	J bpd/psia	N _{p, norm} bbl	JD _{norm}	JD	Issue Solution
	2528	2226	909.8	1618	0.10	373189	0.46	0.57	
	2528	2225	895.9	1632	0.11	370977	0.52	0.64	
	2528	2224	909.8	1618	0.12	375136	0.53	0.65	
	2528	2223	909.8	1618	0.12	376124	0.53	0.66	
	2528	2223	909.8	1618	0.12	377112	0.53	0.66	
	2528	2222	951.6	1576	0.098	387939	0.44	0.55	
	2528	2221	951.6	1576	0.10	388796	0.47	0.58	
	2528	2221	951.6	1576	0.10	389652	0.47	0.58	
	2528	2220	909.8	1618	0.100	380413	0.45	0.56	
	2528	2210	909.8	1604	0.10	381518	0.45	0.57	

Export options: HTML, CSV, Text, PDF, Excel 95+, Excel 2007+

Figure 63. Exporting the Oil FMB results table from the E&P Portal

Open the downloaded file “epDataExport.xlsx”:

The screenshot shows an Excel spreadsheet with the following columns: Country, Date, Ppo(Pi), Ppo(P̄), Ppo(BHP), ΔPpo, J, N_{p, norm}, JD_{norm}, JD, Issue Solution. The data is organized into rows, with the first few rows matching the data shown in Figure 63.

Figure 64. Exporting the Oil FMB results in Excel spreadsheet

Conclusions

This Case Study demonstrated application of the Oil Flowing Material Balance to estimate well "8" STOIP and JD using the **E&P Portal**.

A step by step guide was presented to assist users along the way of using the **E&P Portal** and **Oil FMB** tool.

The following steps were covered:

- Input the data to the **E&P Portal**;
- Apply the **Oil FMB** to estimate the well's STOIP and JD;
- Save and export the analysis results.

As usual, data preparation and upload step took the most time an effort, while the analysis part once data is processed was relatively easy and quick.

Imagine the power of the **E&P Portal** then data continually flows to the system for the hundreds and thousands of wells and ready for the analysis like the **Oil FMB** and others in the live mode!

With the help of the **E&P Portal** you can quickly analyze the big number of wells saving the engineering time while increasing the well's and field's production and company's revenues.