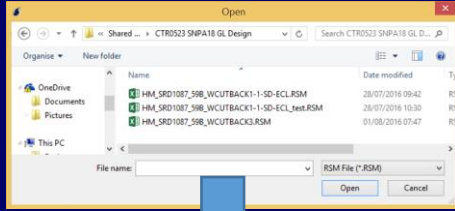


RSM IMPORTER

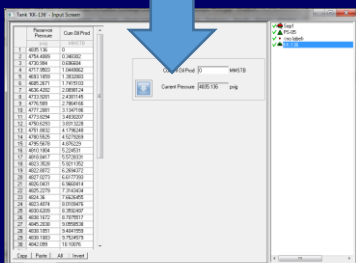
BUSINESS DRIVERS

- To set up a static link from GAP to Eclipse in fields with multiple reservoirs
- Used in forecasting models where Eclipse runtime would become an issue
- Typically used for large network models
- To increase certainty in the forecast



SNPA-BST1

Date	Well Pres	Cumm Oil	Oil QI	GOR	WCT	Well PI
29/12/2016	1380.592	0.026945	0.026945	595.6755	0.004648	74.29175
22/01/2017	1379.900	0.03389	0.03389	655.5369	0.009955	72.02663
19/02/2017	1378.748	0.080834	0.080834	855.4382	0.006059	66.07712
19/03/2017	1375.267	0.107779	0.107779	146.639	0.00665	61.19577
29/04/2017	1380.367	0.194724	0.194724	1089.343	0.006911	61.59988
12/05/2017	1380.995	0.163659	0.163659	1292.391	0.007919	61.86236
30/07/2017	1381.45	0.188814	0.188814	1005.664	0.007046	62.39534
19/09/2017	1381.491	0.215559	0.215559	990.097	0.007363	62.43221
07/10/2017	1381.453	0.242503	0.242503	1011.121	0.007473	62.2841
27/12/2017	1381.537	0.263448	0.263448	1063.389	0.00795	61.98513
19/02/2018	1381.915	0.296303	0.296303	969.7407	0.007574	62.54049
19/04/2018	1381.78	0.323338	0.323338	955.4625	0.007638	62.57626
19/06/2018	1381.982	0.350283	0.350283	1063.512	0.009385	61.6541
19/09/2018	1381.939	0.377227	0.377227	1030.231	0.02299	59.80039
19/12/2018	1382.175	0.404712	0.404712	986.392	0.464959	51.9595
23/12/2018	1382.102	0.431707	0.431707	1028.082	5.33677	39.30304
06/03/2019	1382.03	0.458062	0.458062	1089.29	6.951648	34.18054
27/05/2019	1382.401	0.485007	0.485007	952.3571	8.488435	36.22512
29/09/2019	1382.36	0.511952	0.511952	979.5048	0.18533	34.6163
15/10/2019	1382.388	0.538896	0.538896	932.21	12.4865	32.19501
10/02/2020	1382.263	0.565841	0.565841	1064.095	15.0734	30.3535
19/05/2020	1382.578	0.592786	0.592786	960.9538	17.0943	29.46748
30/08/2020	1382.651	0.619731	0.619731	912.5006	16.95498	28.776
17/10/2020	1382.647	0.646676	0.646676	912.2371	20.91408	27.95807
03/04/2021	1382.606	0.673621	0.673621	956.428	23.9032	26.46622
29/07/2021	1382.563	0.700565	0.700565	1003.034	26.64308	24.98605
7/11/2021	1382.545	0.72751	0.72751	1036.59	29.93431	23.17629
26/03/2022	1382.564	0.754455	0.754455	1029.682	33.18953	21.5297
04/06/2022	1382.53	0.7814	0.7814	1081.902	36.43548	19.8252
31/03/2022	1382.937	0.808345	0.808345	954.8988	38.62263	19.12598
06/09/2022	1383.008	0.835289	0.835289	984.7867	40.62861	18.91887
9/11/2022	1383.024	0.862234	0.862234	860.0549	43.22344	18.02396
06/05/2024	1383.004	0.889179	0.889179	888.9598	46.3234	16.99108
03/11/2024	1382.983	0.916124	0.916124	928.925	49.1267	15.54075
14/09/2025	1382.952	0.943069	0.943069	966.5025	52.3709	14.24971
09/12/2025	1382.97	0.970014	0.970014	1007.848	55.6208	13.43885
29/07/2026	1383.015	0.996959	0.996959	1089.4202	59.0941	13.09542
19/03/2027	1383.058	1.023903	1.023903	995.4727	61.7519	12.35219



RSM IMPORTER

OBJECTIVES

Production Optimisation and Forecasting in large complex networks is still a problem if the network back pressure and detailed optimisation parameters are of relevance. The field production outlook certainty can be increased if items such as detailed artificial lift, pipe and equipment hydraulics, and reservoir input parameters are matched in detail.

Eclipse does not complete complex surface pressure drop calculations, detailed artificial lift hydraulics and cannot handle many facilities constraints.

For large systems, a static link between the reservoir simulator can be used if GAP has to be used for forecasting (Oil models). A dynamic link between Eclipse or TNAV and GAP takes excessive run time, thus making detailed iterative matching too timely. The RSM importer helps the Production Technologist to set up such a static link. The same base data is used for artificial lift design (life of well data).

REQUIRED RSM SETTINGS

The preferred file format and key word for the Eclipse or TNAV output is in Excel format. Parameters that are required are

Date-DATE

Field cumulative oil- FOPT (mstb)

Well cumulative oil-WOPT (mstb)

Reservoir Pressure-FPR (psi)

9 well block pressure - WBP9 (9 block pressure around each well, psi)

Well water cut-WWCT (frac)

Well GOR-WGOR (scf/ stb)

Well PI-WPI (psi/stb/d)

Well oil production-WOPR (mstb)

Well gas production-WGPR (mmscf/d)

Well water production-WWPR (stb/d)

DESCRIPTION

The engineers save valuable time manually processing, cutting and pasting data from Eclipse/ TNAV in Excel. The tool imports the RSM file and extracts the data on a per well basis. The life of well relevant data for GAP, such as cumulative oil versus effective reservoir pressure, GOR and WCT development are extracted effectively.

Three sets of data are created:

1. Process Eclipse/ TNAV data to exclude unwanted points and shrink to 50 points. Data may include the production history that has been used for matching.
2. Process data and create 50 life of well reservoir performance curves from its current cumulative oil onwards.
3. The reservoir performance curve is matched to current production test data.

WHAT IS UNIQUE

The reservoir simulator key data that impacts well performance, artificial lift optimisation and back pressures can visually be QC'd.

Re-processing of data takes seconds Eclipse/ TNAV history matching is time intensive. The trend of the key reservoir parameters (RPCs) can be matched with the tool. The latest production test data is entered into the tool.

Eclipse Label	Well Label	IPR Label	Curr Cumm Oil	GOR	WCT	Pres	IPR shift	IP	Match Points
SW1-P151	SNP-P01		0.149	4185	2	3505		0.7	10
SW1-P251	SNP-P02		0.592	1558	2	3381		7.2	35
CN1-P3	SNP-P03		1.463	711	28	3306		0.6	15
CN1-P4	SNP-P04		0.776	1115	4	2000	-1346.0	1.6	15
CN2-P551	SNP-P05T1		3.331	695	19	2722	-608	4.4	20
CN2-P6	SNP-P06		3.464	1686	1	1952	-1445	14	20
CN2-P7	SNP-P07		3.992	1605	40	3476		4.8	10
NE1-P851	SNP-P08T1		0.265	1684	1	3480		18.0	20
SW1-P9	SNP-P09		1.023	1293	0	3119		13	10

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