

tNavigator 用户通讯

tNavigator 新一代高效精细网格数值模拟系统

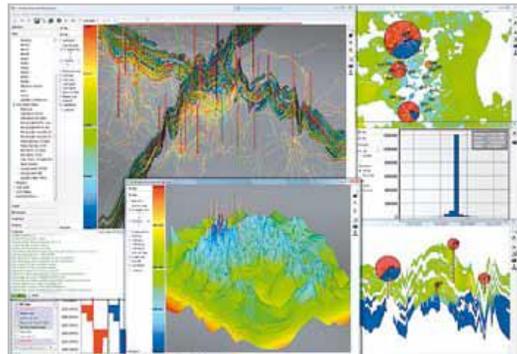
— 行业革命性的新一代高效精细油藏数值模拟技术

目前，各油田投入大笔经费做精细油藏地质描述，然而进入油藏数值模拟阶段，不得不进行模型粗化，部分地质特征在不经意间被忽略掉，失去了精细油藏描述的意义。俄罗斯**tNavigator**技术解决了这一难题，基于工作站即可实现巨型油藏的高效并行数值模拟。油藏模型不再粗化，具有精细地质模型平面和纵向的高精度，真实反映地下流体的运移规律，通过精细油藏地质描述及精细油藏数值模拟，提出更好的下步开发方案，最终更大程度提高油田采收率。

最新培训视频教程

- Video 1: How to Use tNavigator
- Video 2: Model Designer Part 1
- Video 3: Model Designer Part 2
- Video 4: Waterflood
- Video 5: Quality of History Match

为了方便各位用户，可访问我方官网下载最新视频教程和培训手册：
<http://www.colchis.cn/>



技术支持电话：+86 10 5792 6990
支持邮箱：support@colchispetro.com

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• **tNavigator** 操作手册及demo 工区指南

Unique tools for
accurate workover
actions modeling

tNavigator

New Generation
Interactive Reservoir
Simulator

tNavigator用户会于10月1日在休斯顿召开，与行业客户分享应用经验和成果

The fastest most scalable reservoir simulator on Earth!

Welcome!



tNavigator®

The fastest most scalable reservoir simulator on Earth

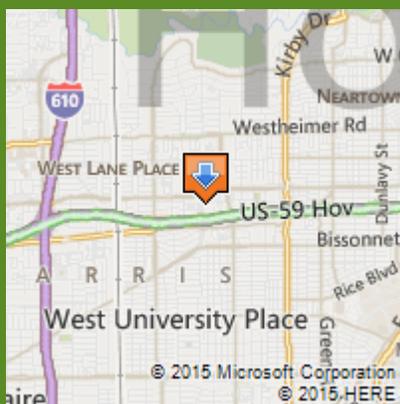


When

Houston - October 1st
 Registration 8.30am
 Full day event
 No cost to attend
[Add to Calendar](#)

Where

DoubleTree by Hilton
 6 Greenway Plaza
 Houston
 TX 77046



[Driving Directions](#)

The advance of static geological modeling tools has allowed geoscience subsurface teams to create massive, detailed 3D representations of an asset. The work of the reservoir engineer is to ensure that the model is physically a reality in order to maximise reservoir returns.....

tNavigator is a fully parallel reservoir simulation tool designed for handling complex high resolution geological models with no upscaling.

Our tests to date have proved that **tNavigator** can handle high resolution models of up to 1 billion cells!

Combine this with our scalability tests where we showed acceleration factors of over 1300 times using 4096 cores and suddenly all project deadlines become possible to meet!

By utilising our friendly pricing policy, plug and play cluster solutions and cloud offerings massive uncertainty studies and high resolution modeling should not be a privilage.....it should be a standard!

tNavigator®

Breaking speed limits in reservoir simulation.....

[Register Now - Houston October 1st!](#)

It is simple to sign up your colleagues at the same time!

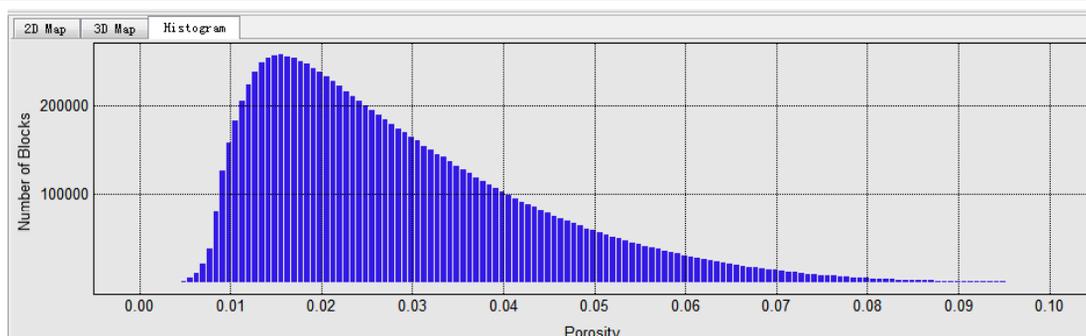
*Rock Flow Dynamics
 Next Generation Reservoir
 Simulation Event
 Houston, October 1st*

tNavigator精细网格数值模拟技术

应用实例一：巨型模型单机工作站运算效率高且精准

国内某油田碳酸盐气藏应用实例

- 单机工作站完美实现巨型模型千万活网格数模运算



总网格数：3000万 活网格数：1400万

模型环境：黑油、气水两相、碳酸盐气藏

硬件配置：12核工作站，64G内存 时间步：813

运算耗时：3小时37分钟

— 静态模型与动态模型完美结合

— 项目研究周期要求高

— 充分利用多核运算

— 实时显示模拟结果

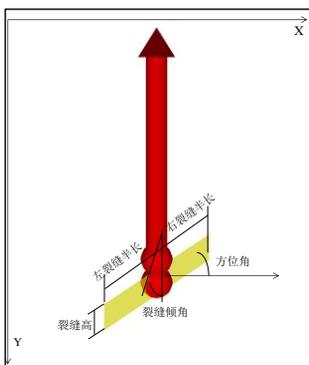
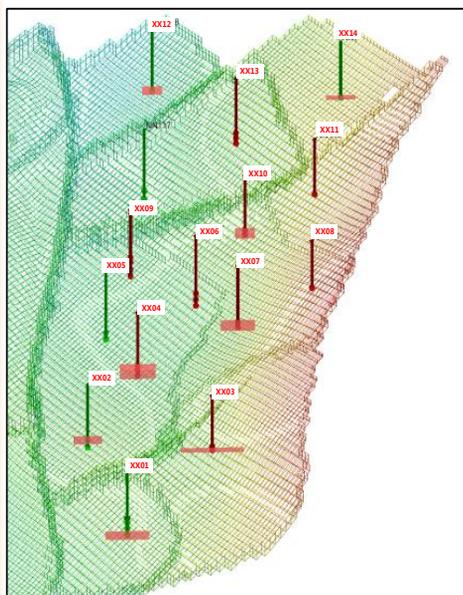
用户感悟：

- 1、单机工作站上即可处理整装致密油气藏千万网格巨型模型的运算，使模型更精细；
- 2、tNavigator与常规建模、数模软件兼容性好，输入输出数据均实现了无缝接口；
- 3、tNavigator能较好显示和模拟大模型，大模型三维显示、旋转非常流畅，而且能在运算的同时实时显示三维、二维、曲线、井产出剖面图等，便于实时跟踪和模型调整；
- 4、将有限差分模拟与流线模拟集于一体，模型运算过程中即可查看流线结果；
- 5、tNavigator在模拟中可便捷地实现暂停和重新启动，即使意外关机也能轻松重启续算；
- 6、经与常规数值模拟器的运算结果对比，不但可以进行单机工作站高效运算，而且结果与常规数值模拟器的运算结果基本一致，误差率极低。

tNavigator精细网格数值模拟技术

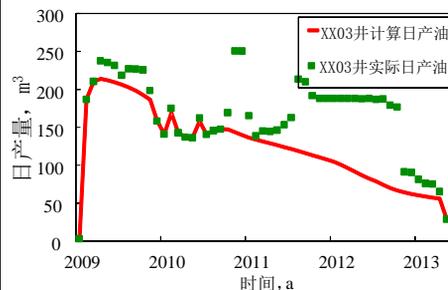
应用实例二：准确描述压裂缝的几何形态，拟合精度高，很好的体现压裂效果

国内某油田压裂模型示意图

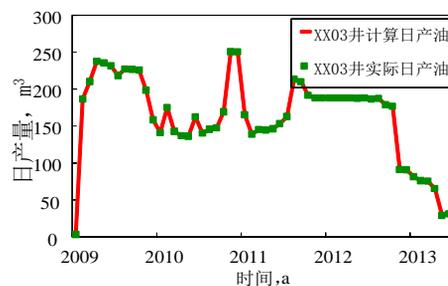


- ①考虑压裂缝渗透率与闭合压力的关系；
- ②压裂缝的宽度；
- ③压裂缝的倾角；
- ④压裂缝的方位角；
- ⑤压裂缝的几何形态。

XX03井等效模型日产油拟合曲线

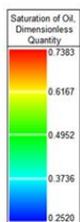


XX03井压裂模型日产油拟合曲线

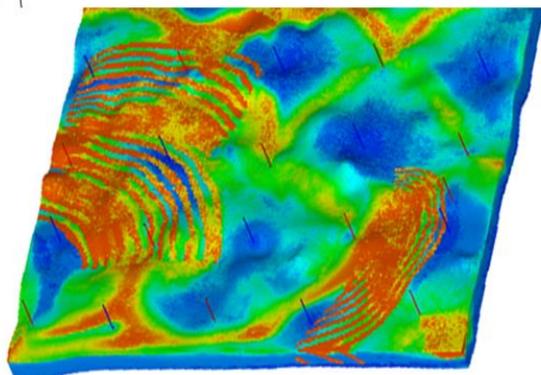


应用实例三：模拟高精度复杂模型

国内某油田侧积夹层+聚合物驱高精度模型应用实例



高精度模型刻画侧积夹层 平面网格5m*5m



通常存在问题：

模型精度高
非均质性强
聚合物驱

收敛性差、
运算耗时长

解决方案：

tNavigator解法稳定、多CPU多核
的优化算法保证精细模型高效运算

操作手册及相应Demo工区指南

为方便大家更好的了解和使用tNavigator技术，全套详细英文操作手册及相应Demo工区，请访问我方官网下载<http://www.colchis.cn/>

1 The Main Features

- 1.1 How To Use tNavigator
- 1.2 How To Do Field Development Planning
- 1.3 How To Import Export Data Reports
- 1.4 How To Handle Multiple Model Versions
- 1.5 How To Load Maps And Graphs
- 1.6 How To Use Restart
- 1.7 How To Use Graph Templates
- 1.8 How To Use Hybrid Format
- 1.9 How To Use Compositional
- 1.10 How To Use Thermal

2 Waterflood

- 2.1 How To Manage Waterflood
- 2.2 How To Interactive Tracer Injection
- 2.3 How To Use Tracers Via Keywords
- 2.4 How To Add Aquifer
- 2.5 How To Use Salts
- 2.6 How To Use Behind The Casing Flow

3 Build Model from Text files, Load Well Data

- 3.1 How To Update Schedule
- 3.2 How To Add LAS Use Well Section
- 3.3 How To Load Well Data From Scratch
- 3.4 How To Add Visualize LAS

4 Properties editing, Interpolation, Kriging, User Arithmetic

- 4.1 How To Edit Rel Perm MULT
- 4.2 How To Use Smoothing

4.3 How To Use Interpolation

4.4 How To Make Filters Via Arithmetic

4.5 How To Use Voronoi Diagrams

5 Hydraulic Fracture. Well Bottom Zone Treatment

5.1 How To Add Fracs

5.2 How To Add Fracs Via Kwrds

5.3 How to do well bottom zone treatment

6 Polymers, Temperature Option

6.1 How To Use Bright Water Polymers

6.2 How To Use Temperature

6.3 How To Use Polymers And Temperature

6.4 How To Change Wettability Via Surfactant

6.5 How to Use ASP

7 Splitting, Dual Porosity, LGR

7.1 How To Split And Merge Model

7.2 Local Grid Refinement

7.3 Dual Porosity

8 Uncertainty Analysis And Assisted History Matching

8.1 How To Use History Matching

8.2 How To Use RFT in History Matching

9 Geology: Reservoir Model Building

9.1 How to Use Geology

9.2 How To Create Faults

10 Additional Courses

10.1 How To Do Auto Update tNavigator.

10.2 How To Use Remote GUI

10.3 HowToExportE100BinariesConsole

11 Tuning

11.1 How To Tune Solver And Timestep Controls

12 Expert Model Evaluation

12.1 How To Do Expert Model Evaluation

... .. 更多教程敬请期待

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