

STRATIMINER INTRODUCTION 地层矿工介绍

IDEAL REFERENCE AND GUIDANCE TO GEOSTEERING REALITY

地质导向实现理想参照与指导

北京思睿德科技有限公司

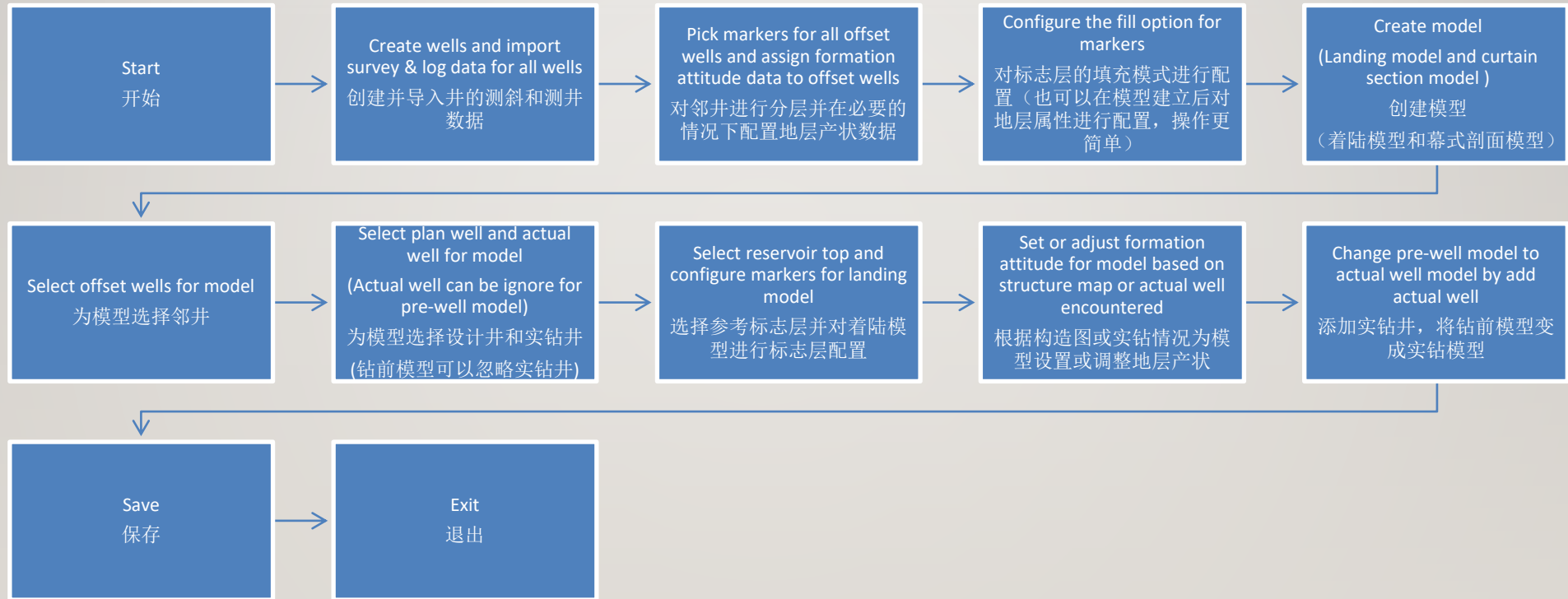
2 STRATIMINER APPLICATION

地层矿工软件应用

- GeoSteering
地质导向
- Marker Picking and Well Correlation
地质分层和多井地层对比
- True Geographic Thickness Calculation
地层真实厚度计算
- Single Well Comprehensive log Interpretation
单井综合测井解释成果成图
- Extract Random Seismic Profile
抽取任意地震剖面
- Virtual Well property modelling
虚拟井地层属性模拟
- Isoline grid data import and contour display
等值线数据导入及等值线图显示
- Get Real Time Data from WITSML Server
从WITSML服务器获取实时数据
- Data Edit and Process
数据编辑及处理

3 STRATIMINER WORKFLOW

地层矿工软件建模流程



4 TRAJECTORY CALCULATION

地层矿工井轨迹计算

- The minimum curvature method is used to calculate the well trajectory. The following data can be obtained by calculating the depth, deviation and azimuth:

采用最小曲率法对井轨迹进行计算，通过对深度、井斜和方位的计算可以得到如下数据：

- True vertical depth垂直深度
- Dog legs(deg/30m or deg/100ft)狗腿度
- North/South offset or North/South coordinates南北偏移量或南北坐标
- East/West offset or East/West coordinates东西偏移量或东西坐标
- Closure闭合距
- Vertical Section任意方向垂直剖面投影
- True Geographic Thickness地层真厚度

	MD m	INC deg	AZI deg	TVD m	TVDSS m	NS m	EW m	DLS deg/30m	VS m	CL m	TSD m
102	2778.51	57.13	196.08	2411.51	2352.01	-163.69	-1102.18	3.29	-163.69	1114.27	2411.51
103	2806.90	58.83	194.32	2426.56	2367.06	-186.92	-1108.49	2.39	-186.92	1124.14	2425.68
104	2835.38	60.78	193.12	2440.89	2381.39	-210.83	-1114.33	2.33	-210.83	1134.10	2438.59
105	2863.75	62.23	192.50	2454.42	2394.92	-235.14	-1119.85	1.64	-235.15	1144.27	2450.64
106	2892.19	63.05	191.61	2467.49	2407.99	-259.85	-1125.13	1.20	-259.85	1154.74	2462.16
107	2920.66	64.92	190.70	2479.98	2420.48	-284.95	-1130.08	2.15	-284.95	1165.45	2473.02

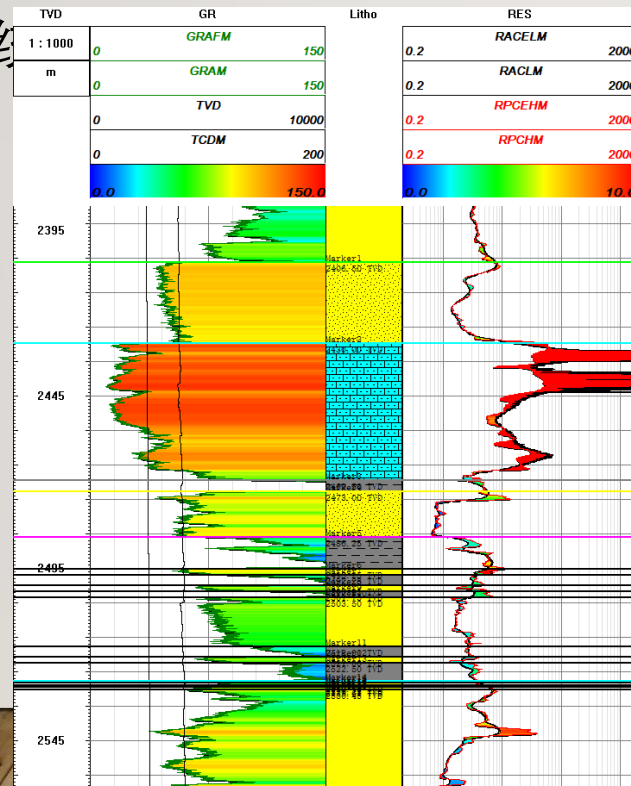
5 FORMATION THICKNESS CORRECTION

地层矿工地层厚度校正

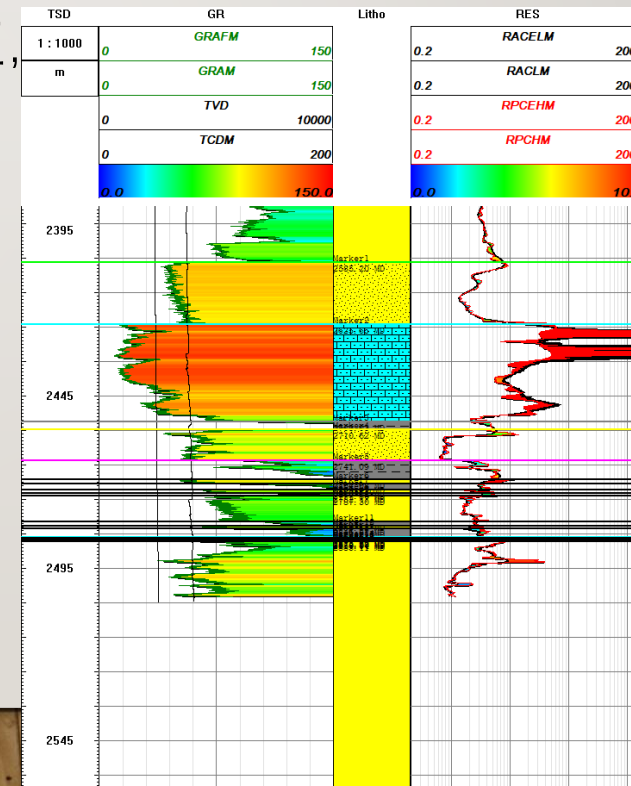
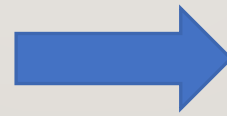
MD	True dip	True Azi	TVD	TVDSS	App Dip	Incident ...	Srv Incln...	Srv Azi / ...
2585.00	20.00	10.00	2406.38	2406.38	0.52	36.35	53.13	258.58

- The traditional geological method is used to correct the formation thickness of adjacent wells so as to get the true geographic thickness.

采用传统

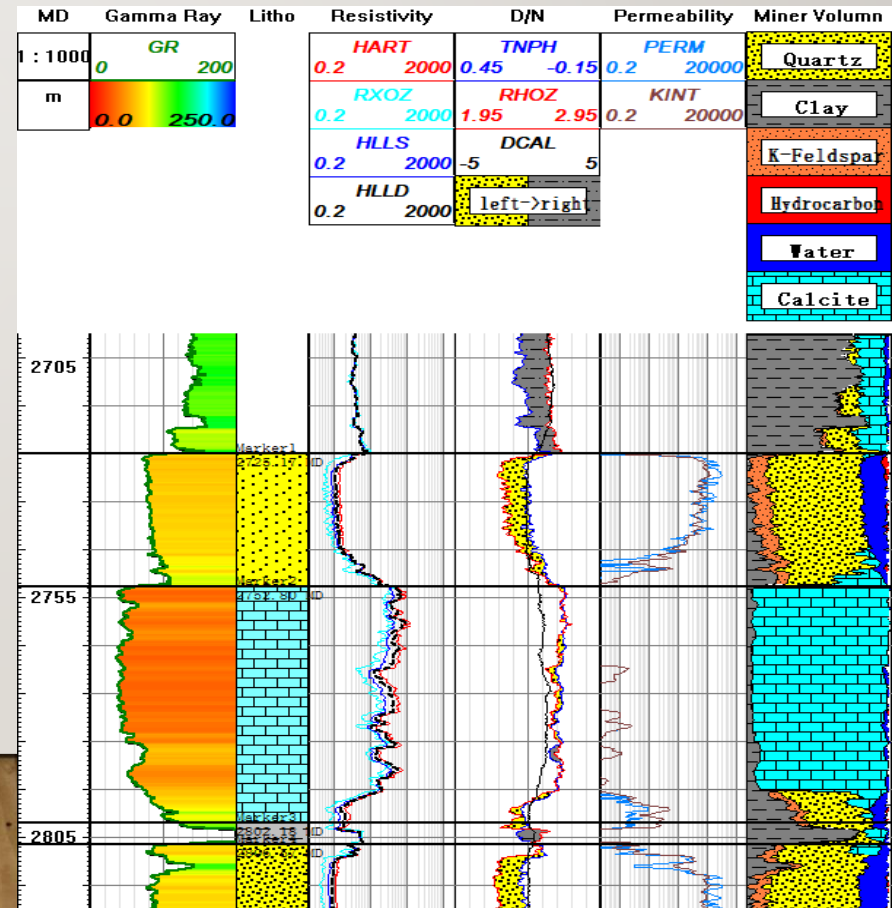
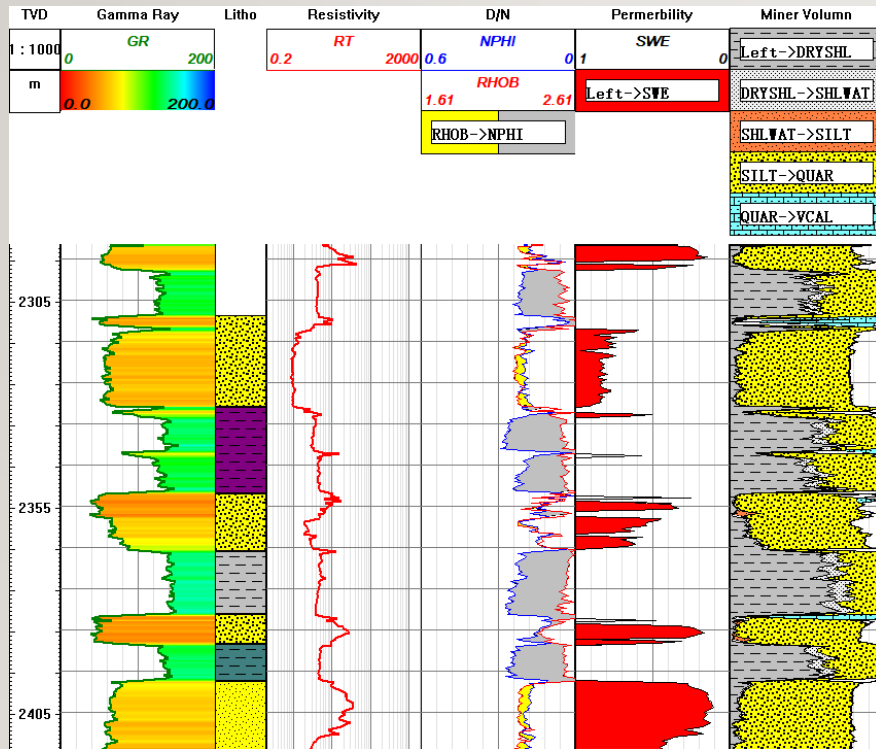


度加以校正,



6 STRATIMINER PLOT SYSTEM 地层矿工制图系统

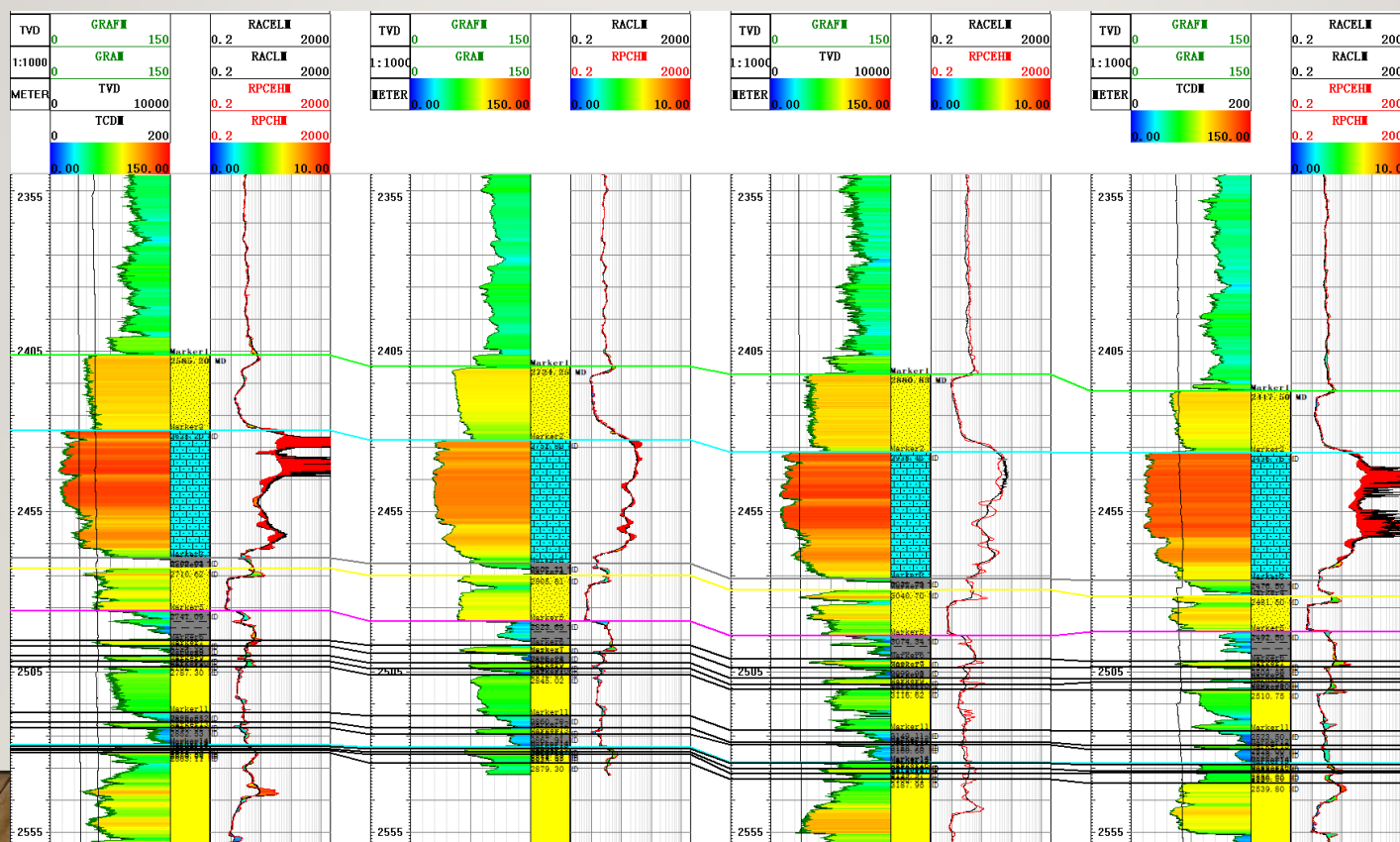
- Single Well Comprehensive Interpretation 单井综合测井解释成果图



7 STRATIMINER PLOT SYSTEM

地层矿工制图系统

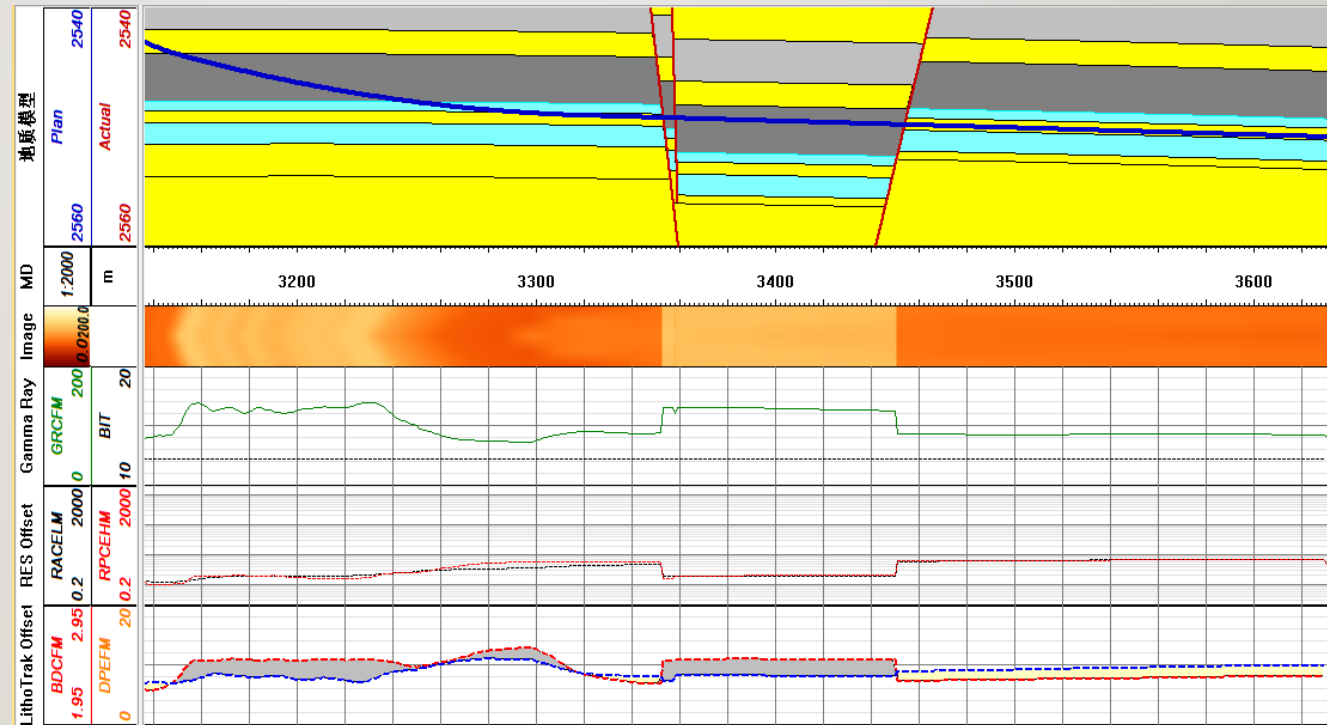
- Multi-well Correlation 多井地层对比图



8 STRATIMINER FAULT PROCESSING

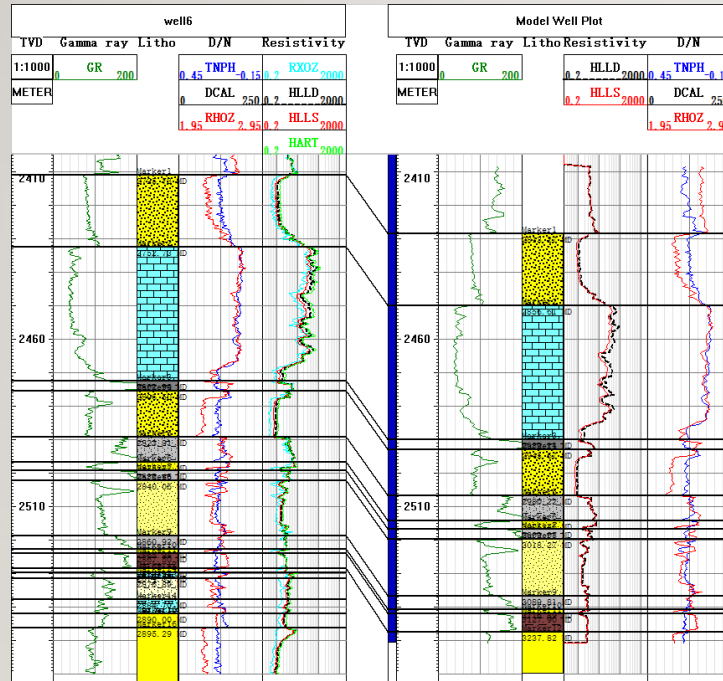
地层矿工断层处理

Generate normal and reverse faults at various angles and organize their primary and secondary relations.
可以生成各种角度的正断层和逆断层并组织其主次关系。

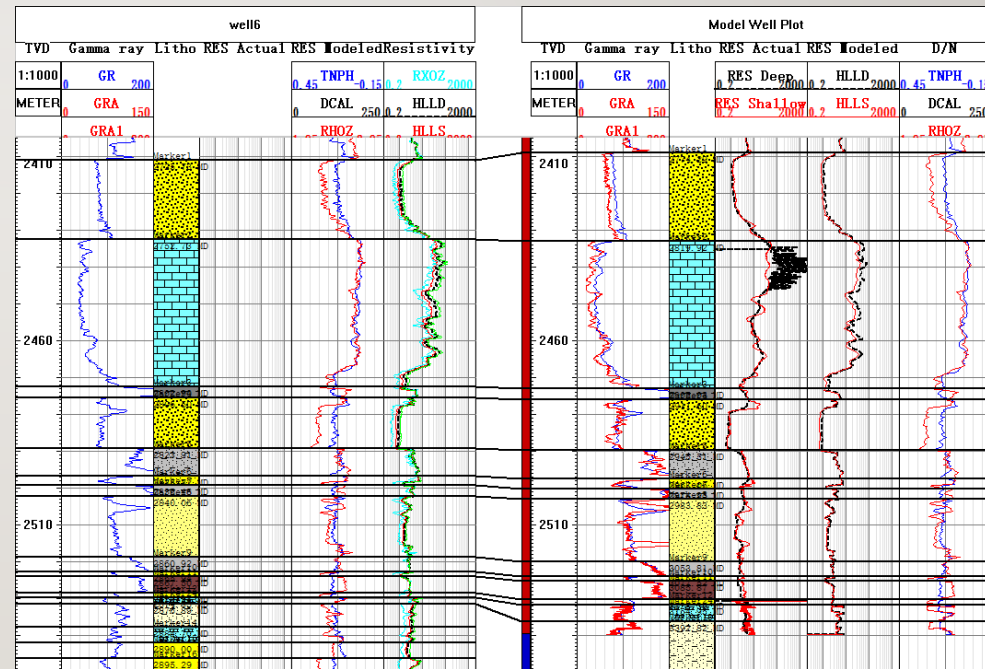


9 STRATIMINER LANDING MODEL

地层矿工着陆模型



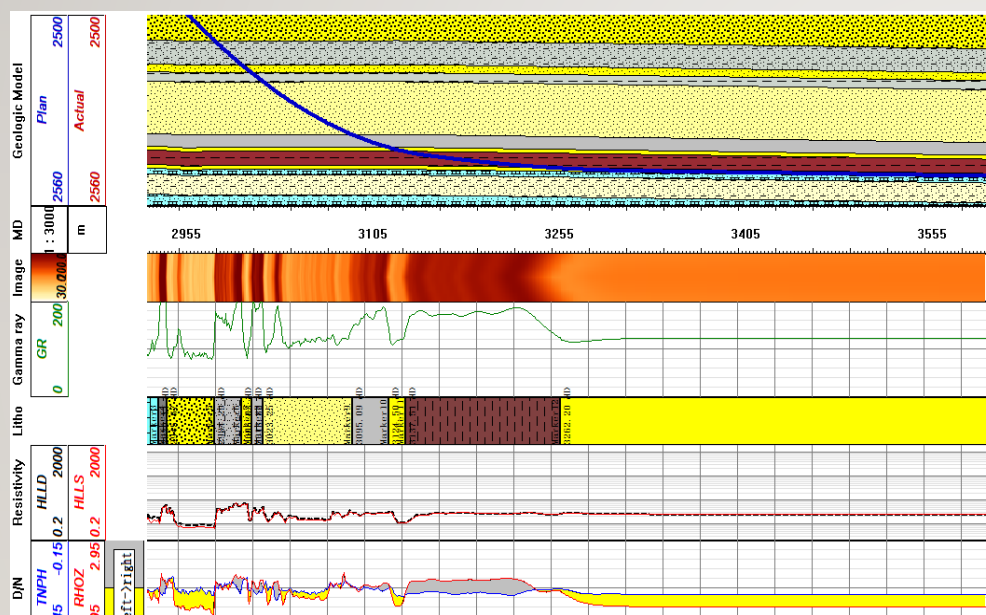
PreWell Model
钻前模型



Real Time Model
实钻模型

10 STRATIMINER CURTAIN SECTION MODEL

地层矿工幕式剖面模型



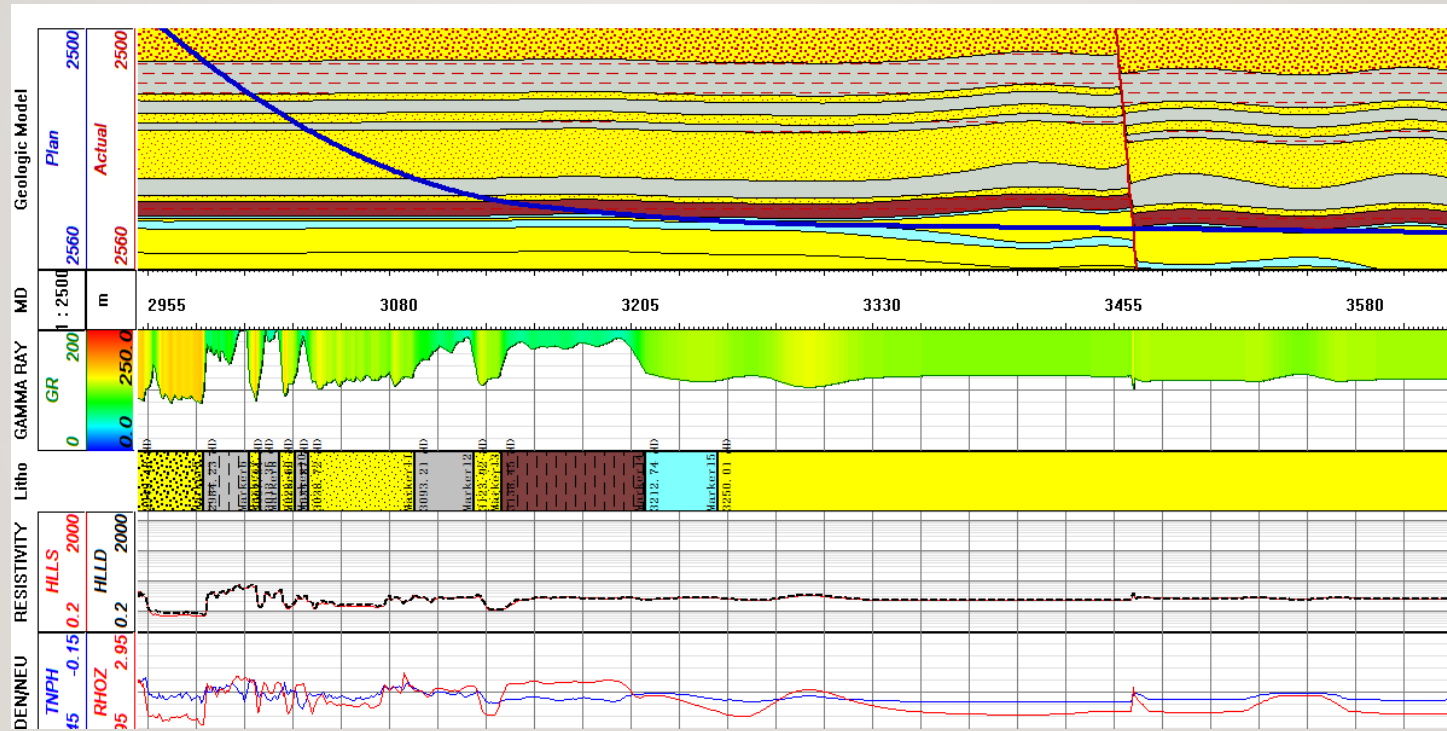
钻前模型
PreWell Model



实时模型
Real Time Model

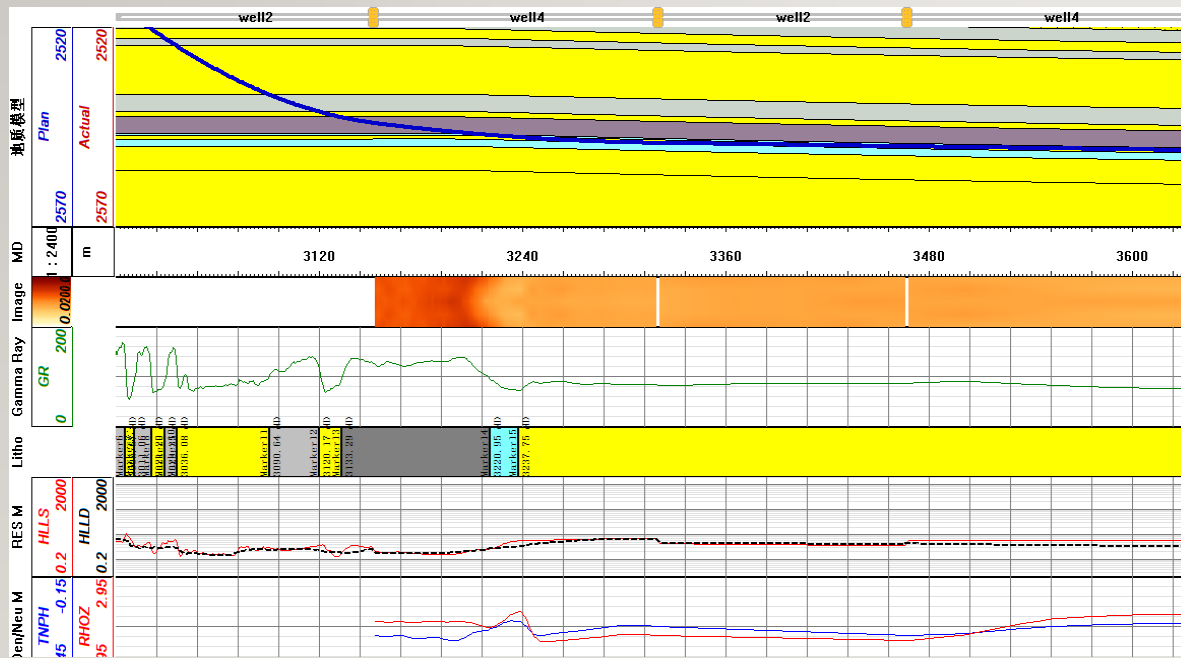
STRATIMINER INCONSTANT THICK MODEL

地层矿工不等厚幕式剖面模型



12 MULTI-WELL MODELING AND SEGMENTATION SIMULATION

多井建模和分段模拟



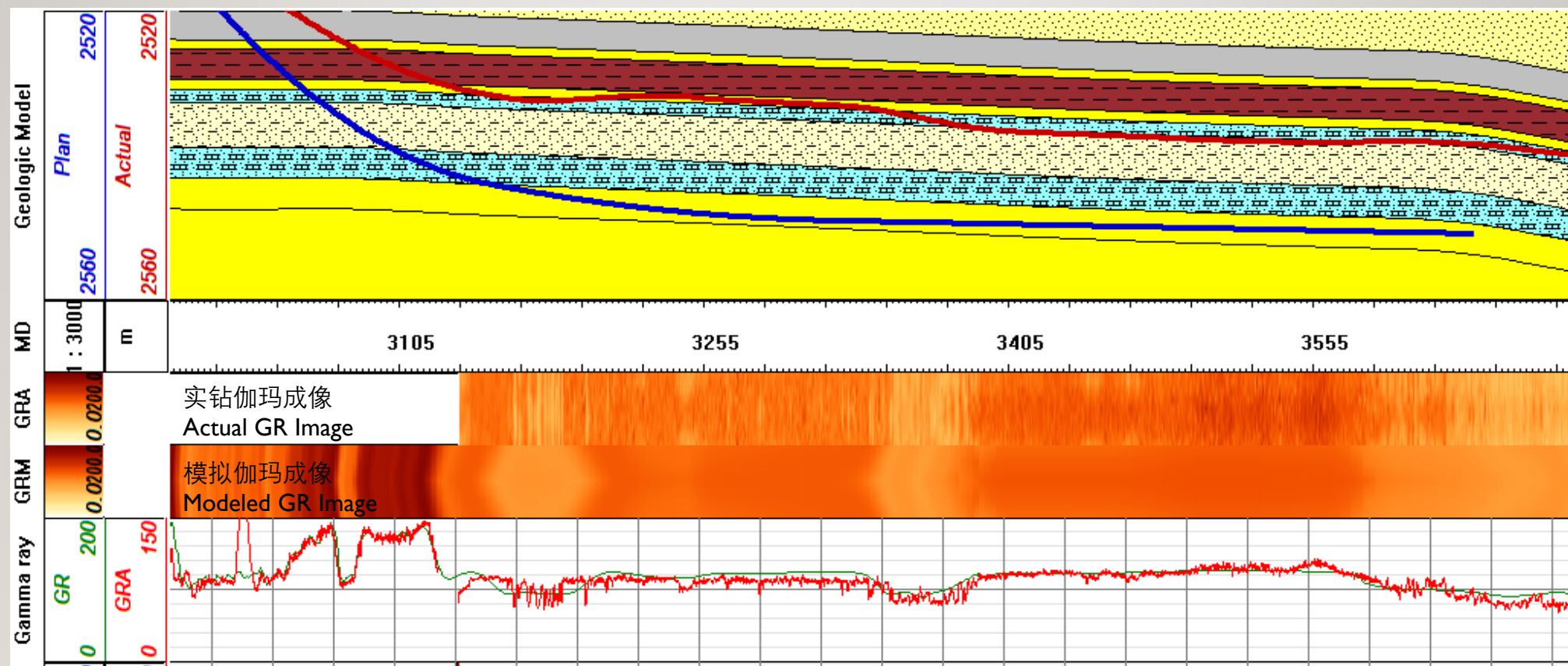
钻前模型
PreWell Model



实时模型
Real Time Model

I3 STRATIMINER BOREHOLE IMAGE

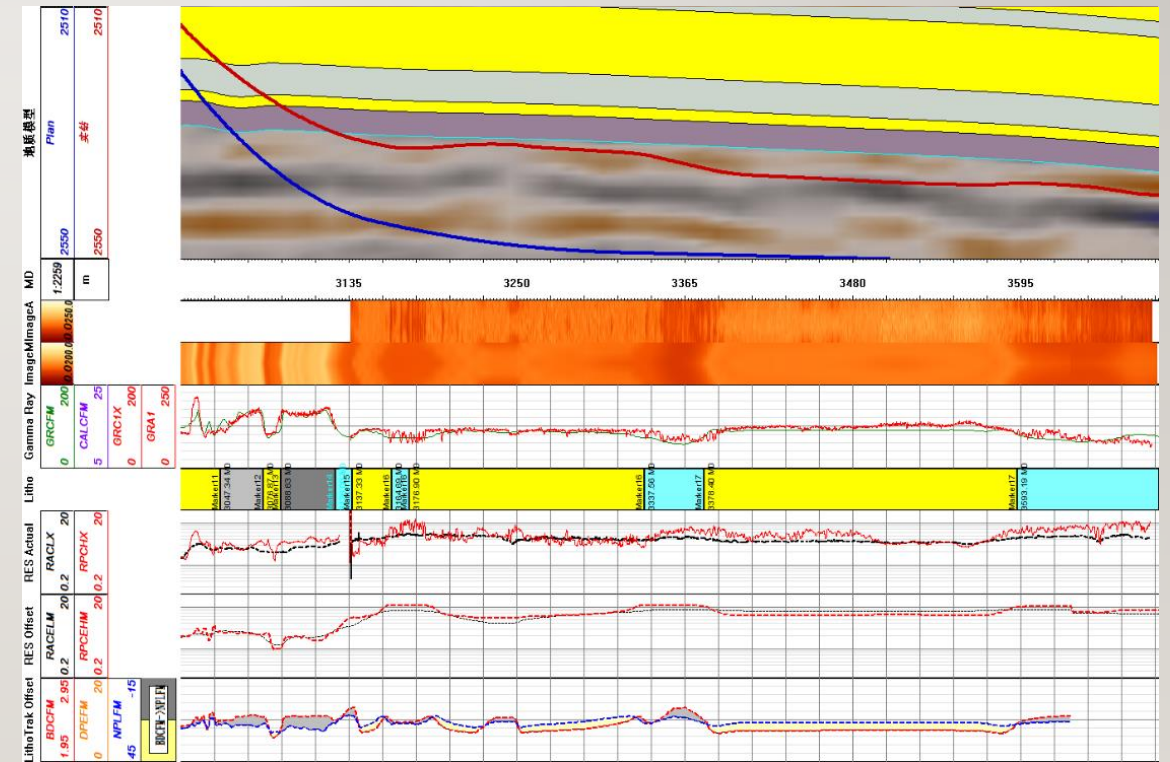
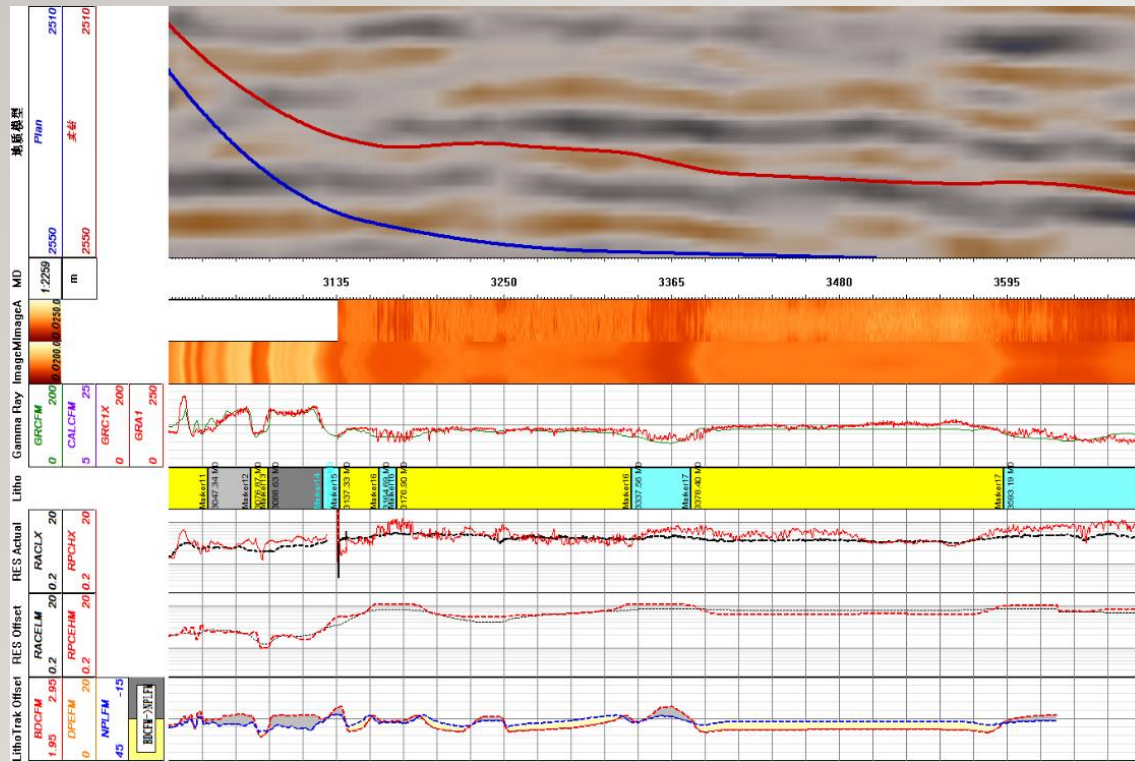
地层矿工井筒成像



14

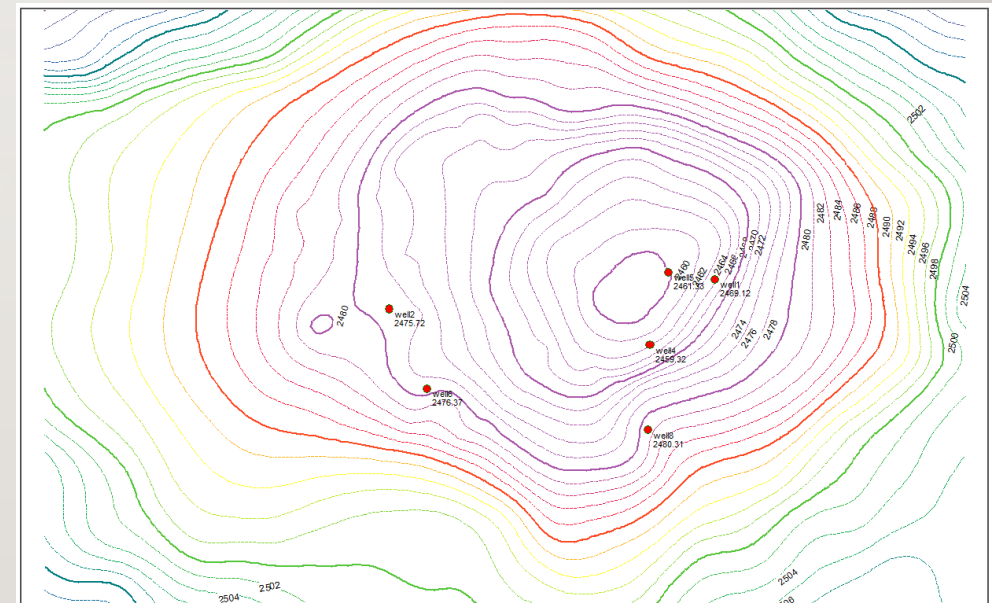
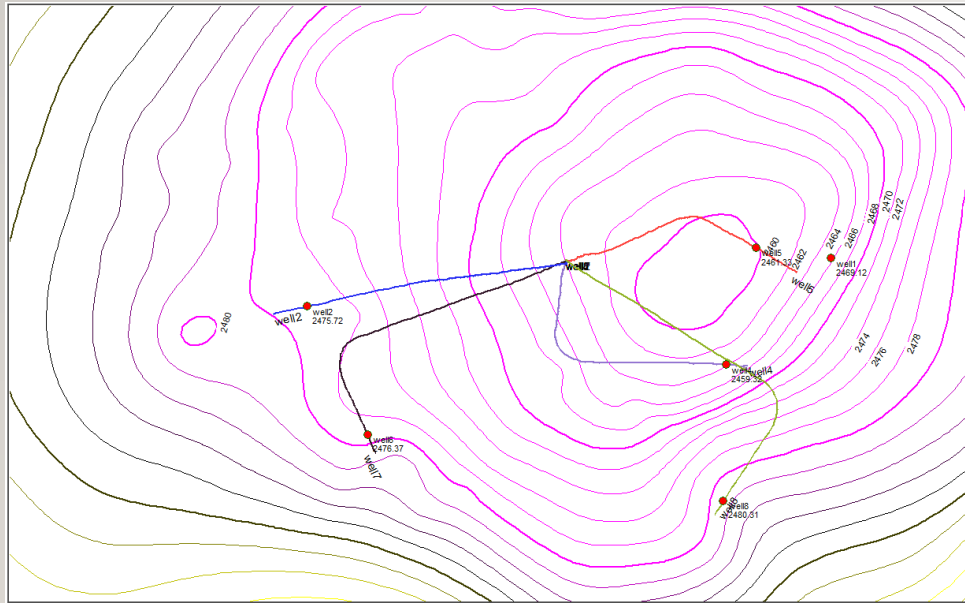
COMBINE SEISMIC PROFILE AND GEOLOGIC MODEL

地震剖面 and 地质模型组合



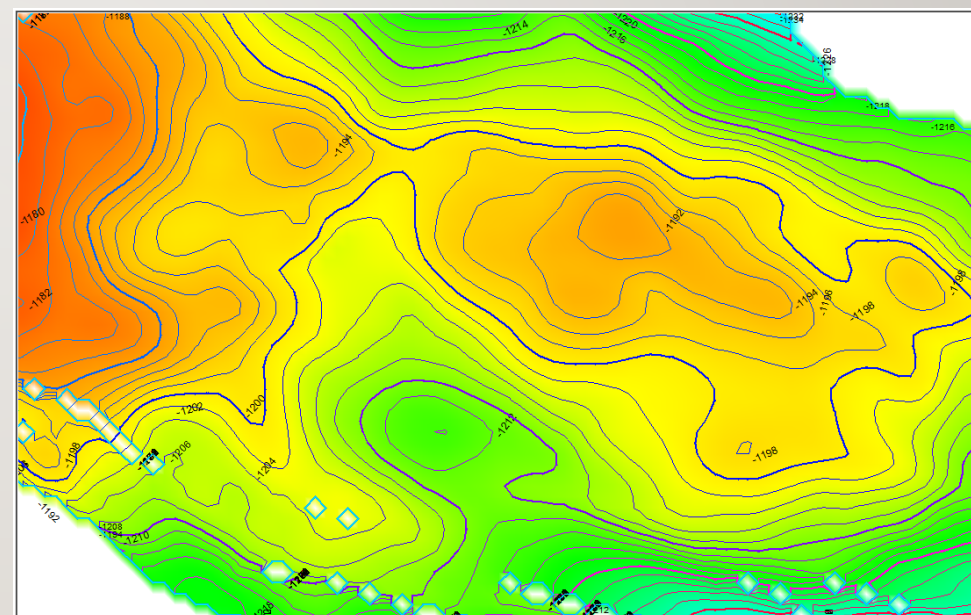
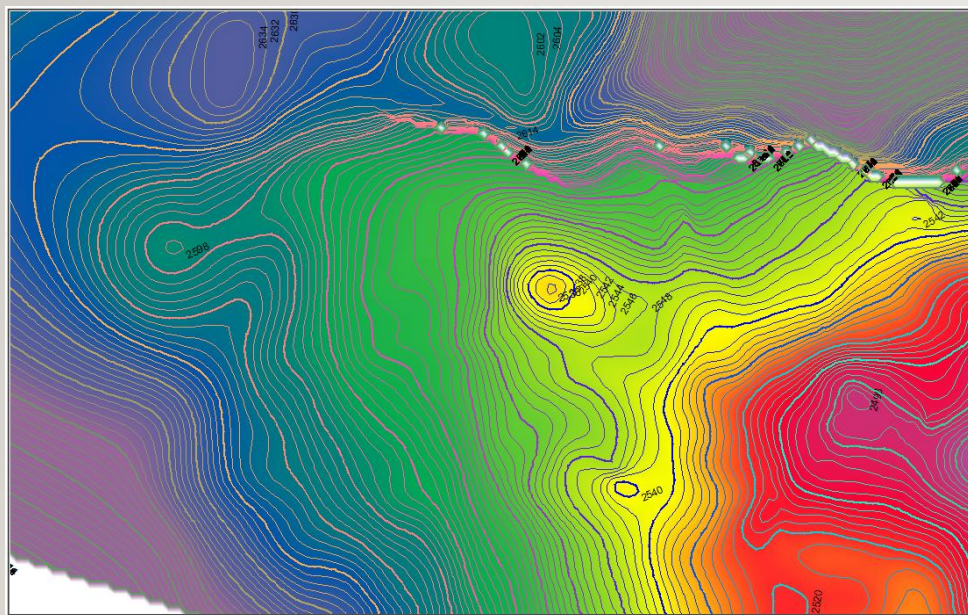
15 WELL LOCATION, TRAJECTORY AND CONTOUR DISPLAY

井轨迹、标志层及等值线图显示



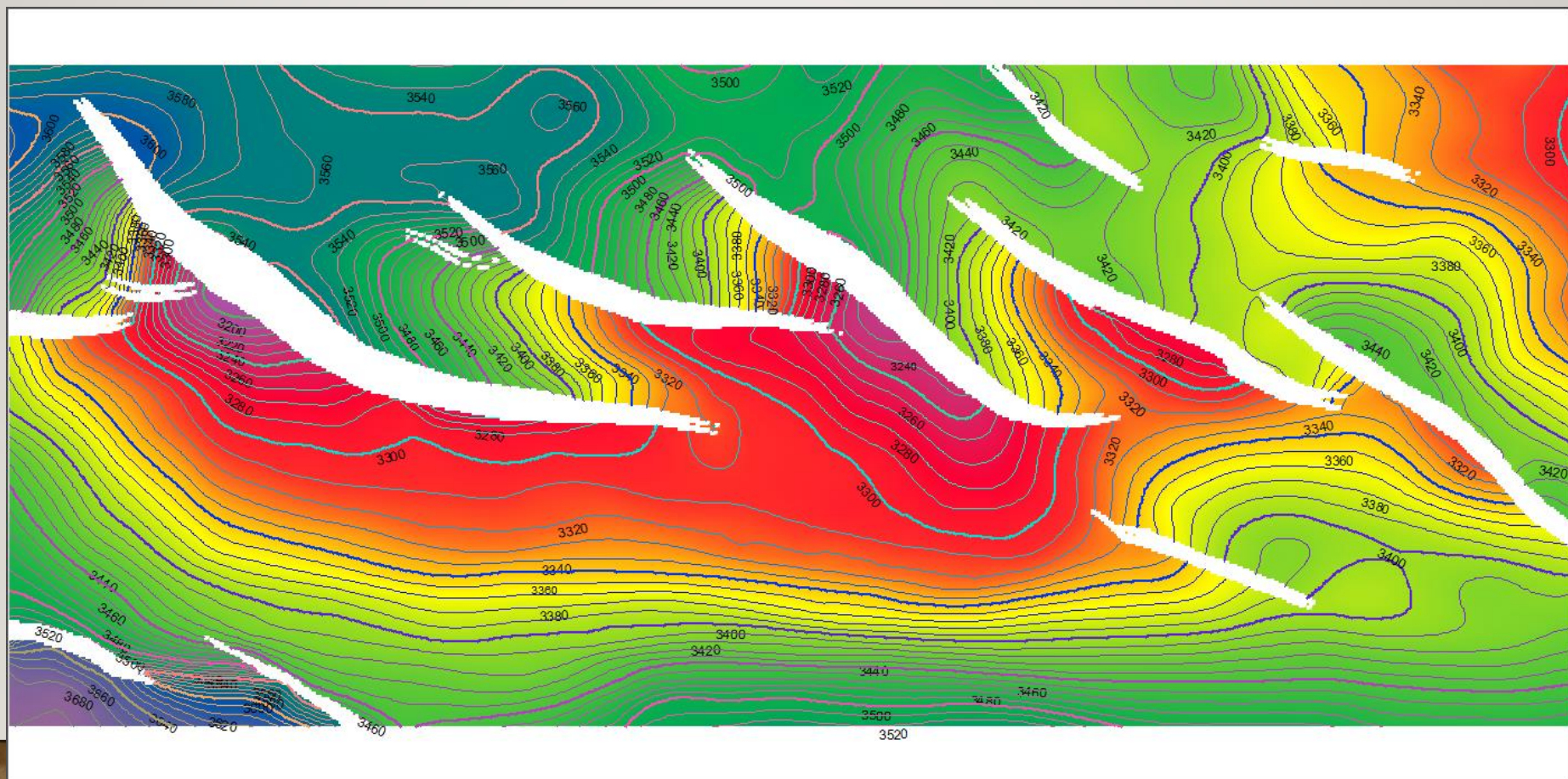
16 GRADIENT CONTOUR MAP

等值线颜色充填



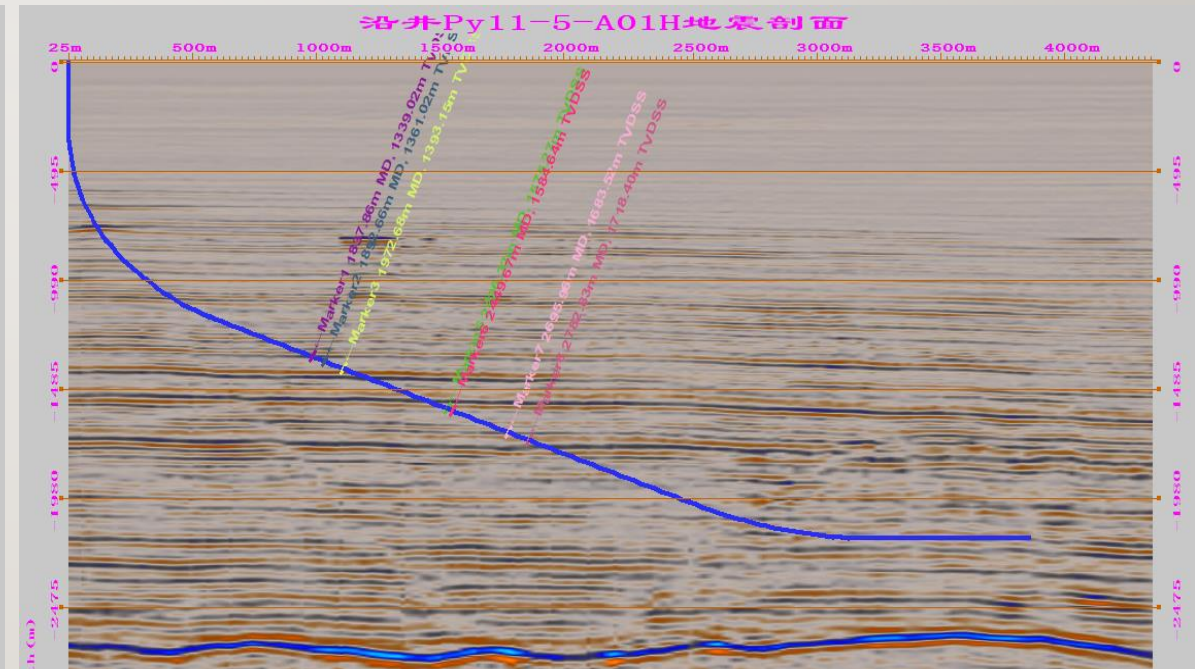
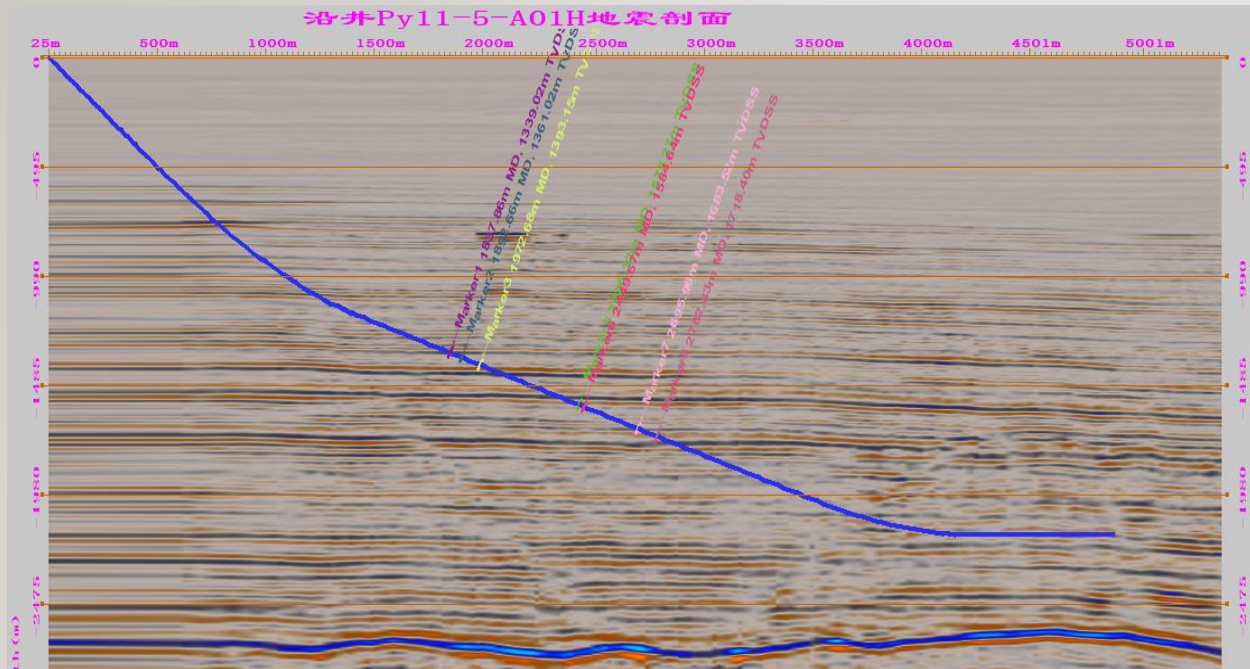
17 COMPLEX TRACING AND DISPLAY

复杂等值线追踪和显示



18 SEISMIC PROFILE ALONG WELL TRAJECTORY

过井地震剖面



19 REAL TIME DATA ACQUISITION

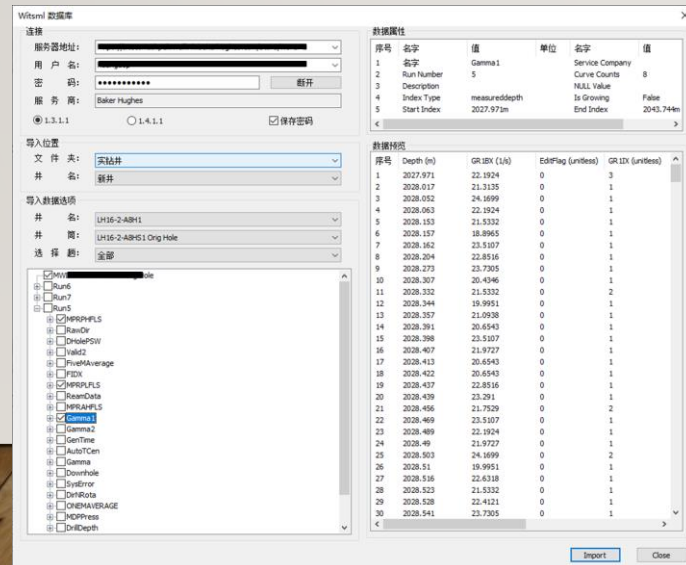
实时数据接收

- REMOTE SERVER CONNECTION

远程服务器连接

➤ WITSML Server Connection and Real Time Data Acquisition

WITSML 服务器连接及数据接收



- DATA BASE CONNECTION

数据库连接

➤ 此功能需要根据数据库类型及需求定制

20 ADVANTAGE OF STRATIMINER

地层矿工软件的优点

- 软件：
 - ✓ 界面友好
 - ✓ 功能区划详细
 - ✓ 操作简单
- 数据
 - ✓ 数据操作功能完善
 - ✓ 可以以图表和图形形式显示
- 绘图
 - ✓ 模板化制图，成图速度快
 - ✓ 多种曲线显示及充填方式
- 功能
 - ✓ 井轨迹计算
 - ✓ 地层真厚度校正
 - ✓ 综合测井解释成图
 - ✓ 地层对比
 - ✓ 地质导向
 - ✓ 等值线图显示
 - ✓ 虚拟井地层属性模拟
 - ✓ 对wits数据的实时接收

21 ADVANTAGE OF STRATIMINER

地层矿工软件的优点

- 地质导向功能：
 - ✓ 模板化制图，建模流程化，建模速度快
 - ✓ 地层真厚度校正，可以建立精准的地质导向模型
 - ✓ 提供着陆模型，并可以根据层位变化趋势，精准预测目的层位置，为精准着陆提供依据
 - ✓ 在对标志层调整的过程中可以自动计算构造产状，并在幕式剖面图中显示出来
 - ✓ 提供多种地层厚度和构造调整方式，可以实现复杂、精准的地质导向模型
 - ✓ 可实现多井分段建模，为在侧向多变的地质条件下进行地质导向跟踪，提供有利依据
 - ✓ 可以实现复杂的三维断层体系，并准确的展现在幕式剖面上
 - ✓ 可以提供井筒成像模拟，为在有井筒成像的情况下提供对比依据
 - ✓ 提供等值线快速追踪并显示，可以把井点和井轨迹显示在构造图上，可以提取鼠标位置的构造产状，为地质导向人员提供实时构造参考
 - ✓ 可以沿井轨迹提取地震剖面，并可以把井轨和标志层显示在地震剖面上，同时提供地震剖面的多种显示方式，支持时间域转深度域
 - ✓ 可实现对wits数据的实时接收，使地质导向实现远程地质导向工作

谢谢！
Thanks!