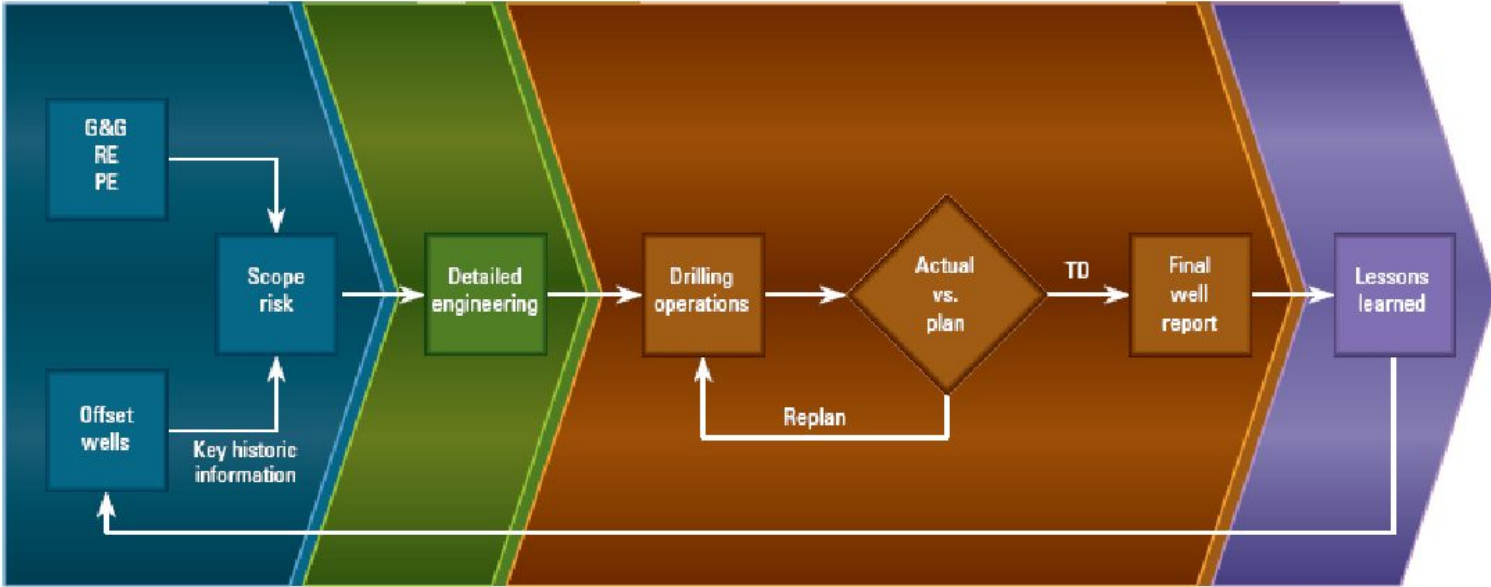
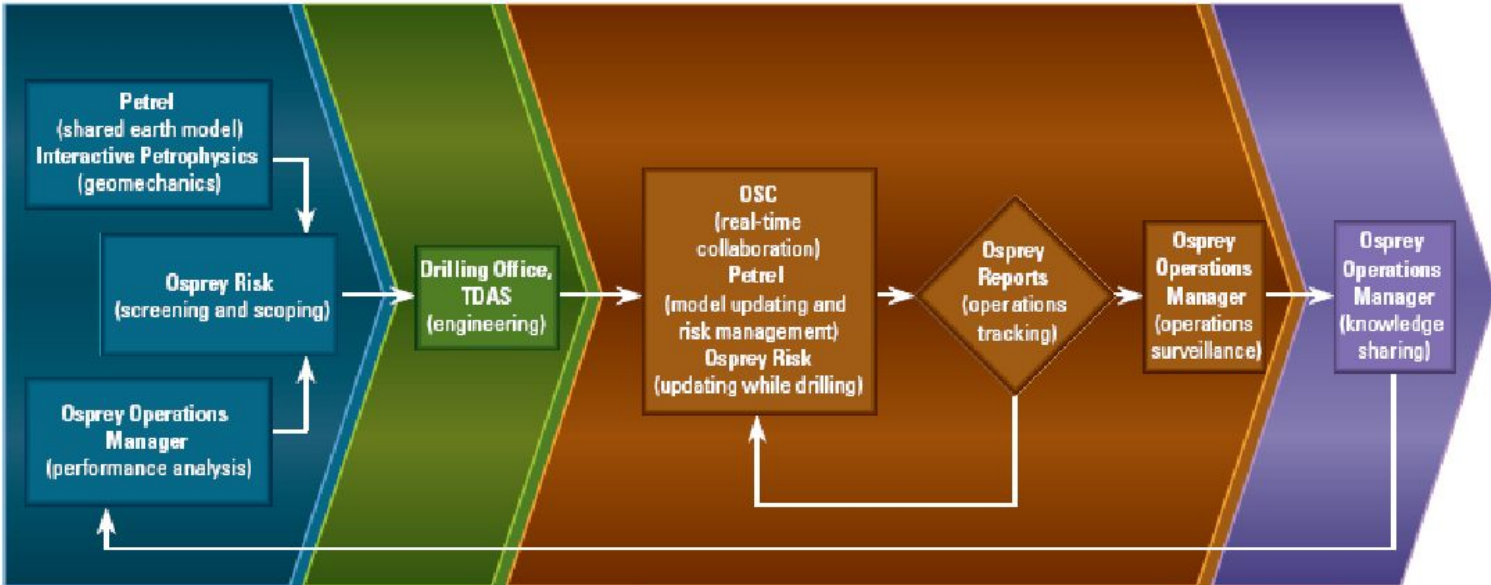


СТРУКТУРА ПРОЕКТИРОВАНИЯ БУРЕНИЯ СКВАЖИН

G&G = Geology and geophysics RE = Reservoir engineering PE = Production engineering OSC = Operation Support Center TD = Total depth



Shared Earth Model Planning Execution—Real-Time Monitoring—Replanning Evaluation

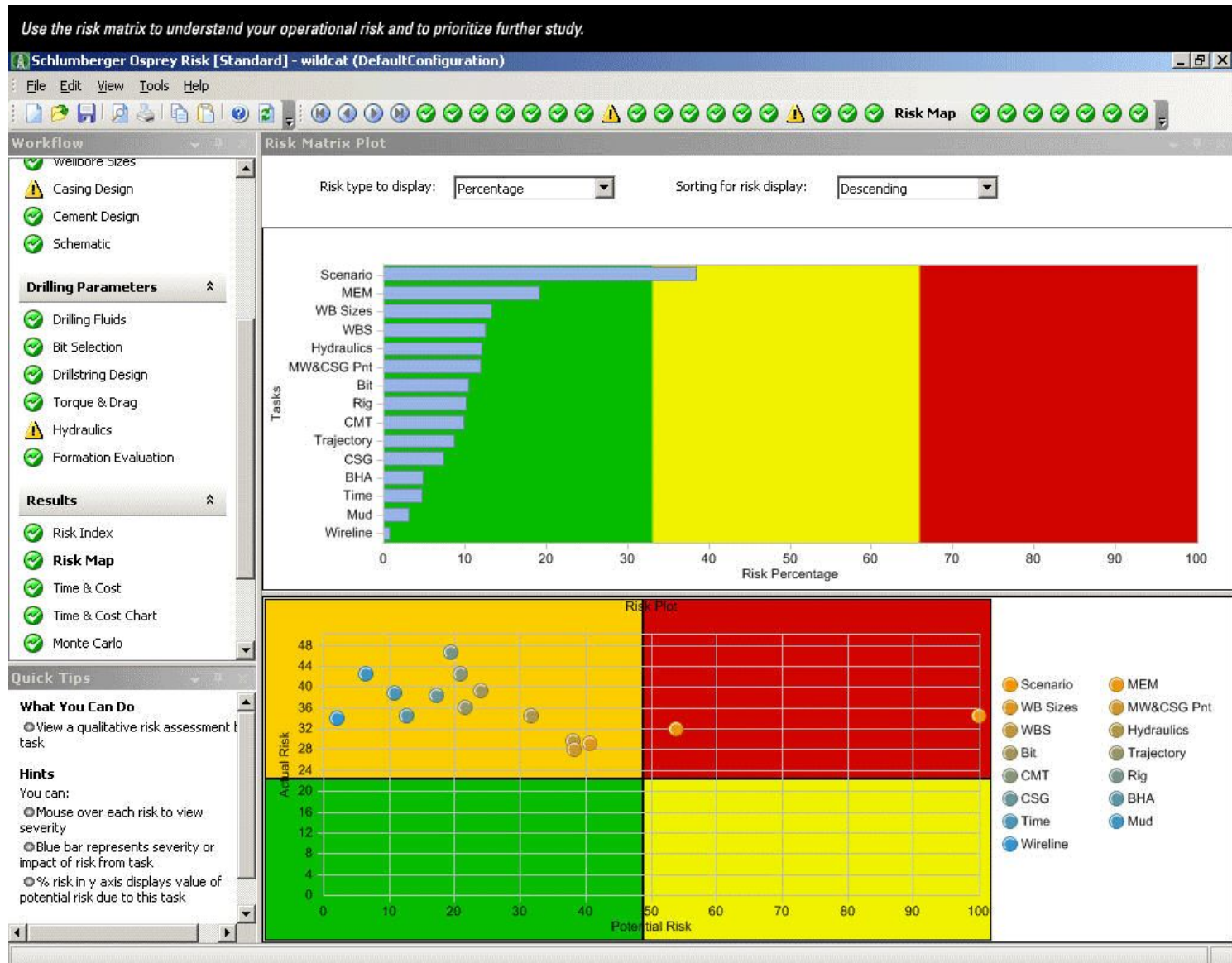


РЕЗУЛЬТАТЫ РАСЧЕТА ИНДЕКСА РИСКА В ПРОГРАММЕ OSPRAY RISK

The risk assessment function displays key drilling risks as a function of depth. The risk index function permits impartial comparison of multiple scenarios.

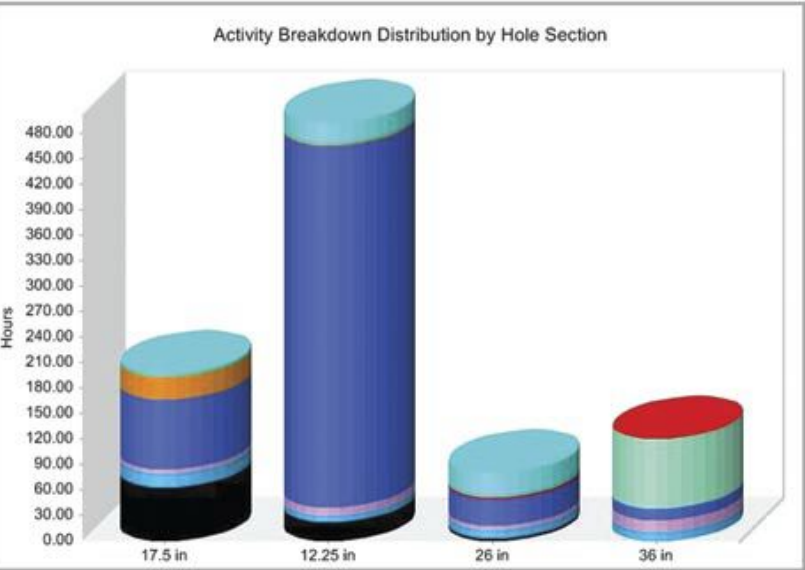
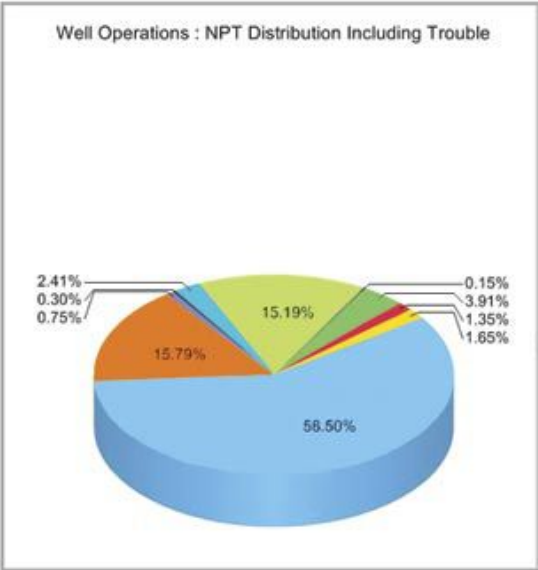
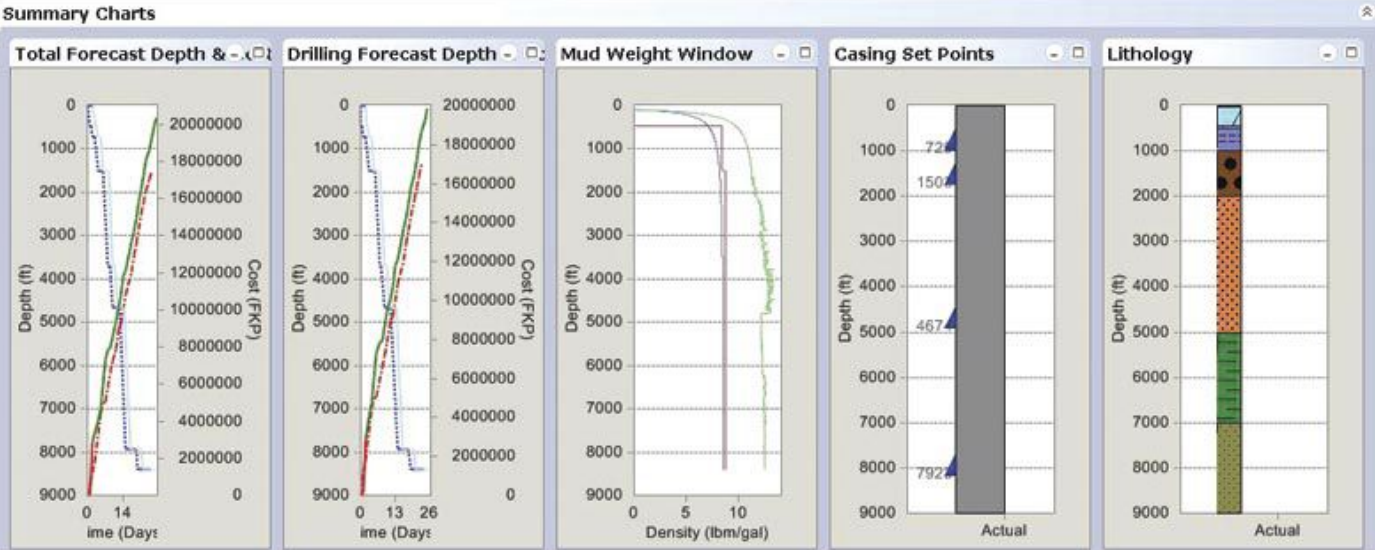


КАРТА РИСКОВ, СПРОГНОЗИРОВАННАЯ В ПРОГРАММЕ OSPRAY RISK



ОЦЕНКА ТЕХНОЛОГИЧЕСКИХ РЕШЕНИЙ ПРИ ПОМОЩИ OSPRAY RISK

Analyze KPIs in a few clicks.



РЕЗУЛЬТАТЫ АНАЛИЗА МЕТОДОМ МОНТЕ-КАРЛО

Accurately determine your financial exposure with Monte Carlo probabilistic analysis of time and cost.

Schlumberger Osprey Risk [Standard] - wildcat (Default Configuration)

File Edit View Tools Help



Input Probability

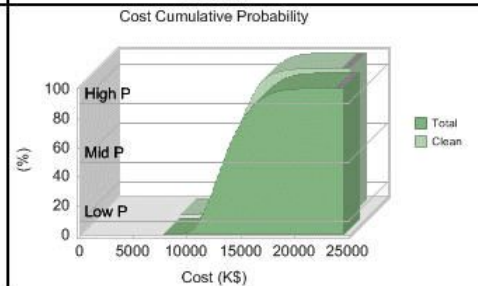
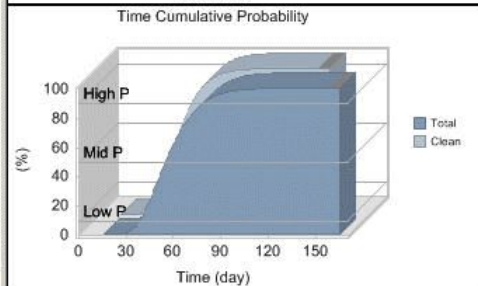
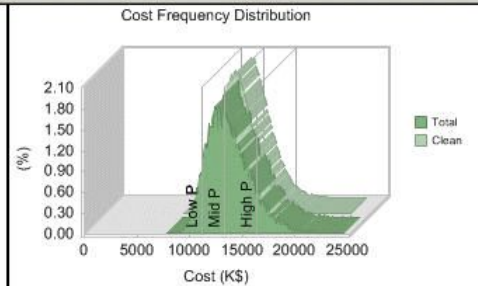
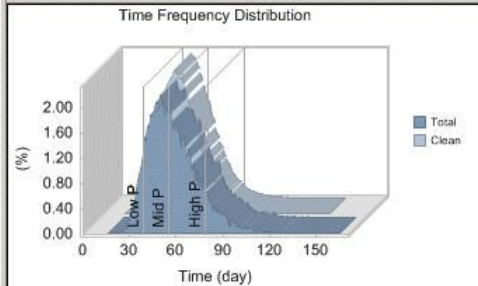
Number Of Iterations: 12000
 Low P% Time: 10
 Mid P% Time: 50
 High P% Time: 90
 Show Clean
 Recompute

Monte Carlo Detailed Grid

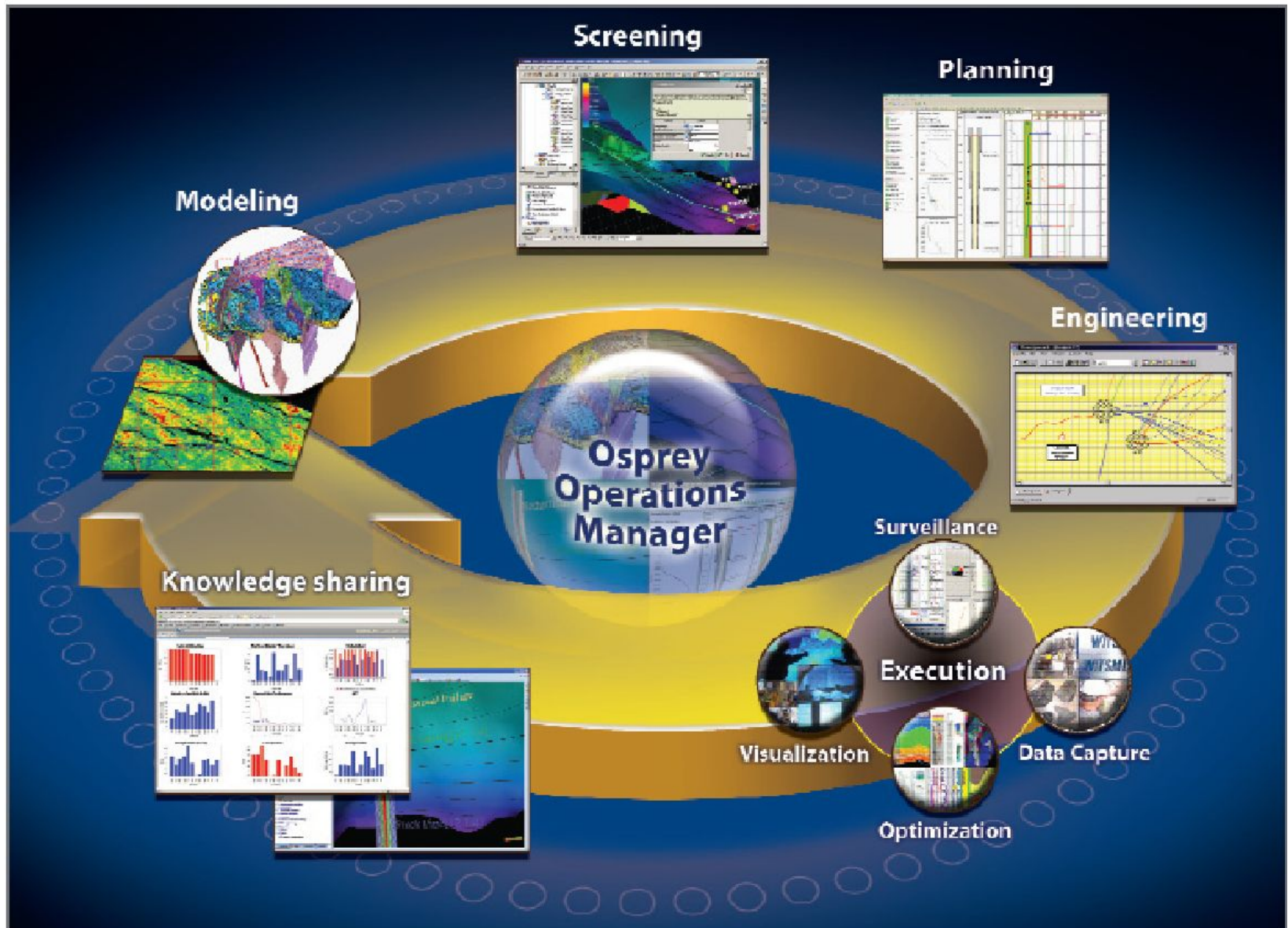
	Task Name	Low P% Time
1	Total	861.11
2	Mobilize Rig Job	35.81
3	Tow Rig	18.19
4	Inspect Area	0.76
5	Safety Meeting	0.33
6	Position Rig	3.03
7	Extend Leg	5.26
8	Jack Up Rig	5.26
9	Skid Drilling Tower	0.76
10	Pick Up And Make Up Tub	2.23
11	Drill Wellbore Job	766.19
12	Surface	140.01
13	Drill Surface	94.49
14	Drill Rotary	84.78
15	Circulate	2.35
16	Short Trip	1.93
17	Circulate	2.35
18	Pull Out Of Hole	1.01
19	Pull Out And Lay	2.05
20	Wiper Trip	8.48
21	Safety Meeting	0.32
22	Pick Up And Make	1.91
23	Run In Hole	0.92
24	Circulate	2.36
25	Pull Out Of Hole	0.92
26	Pull Out And Lay	2.05
27	Run Surface	10.35
28	Clear Rig Floor	0.41
29	Assemble Equipm	0.41
30	Safety Meeting	0.32

Monte Carlo Summary Grid

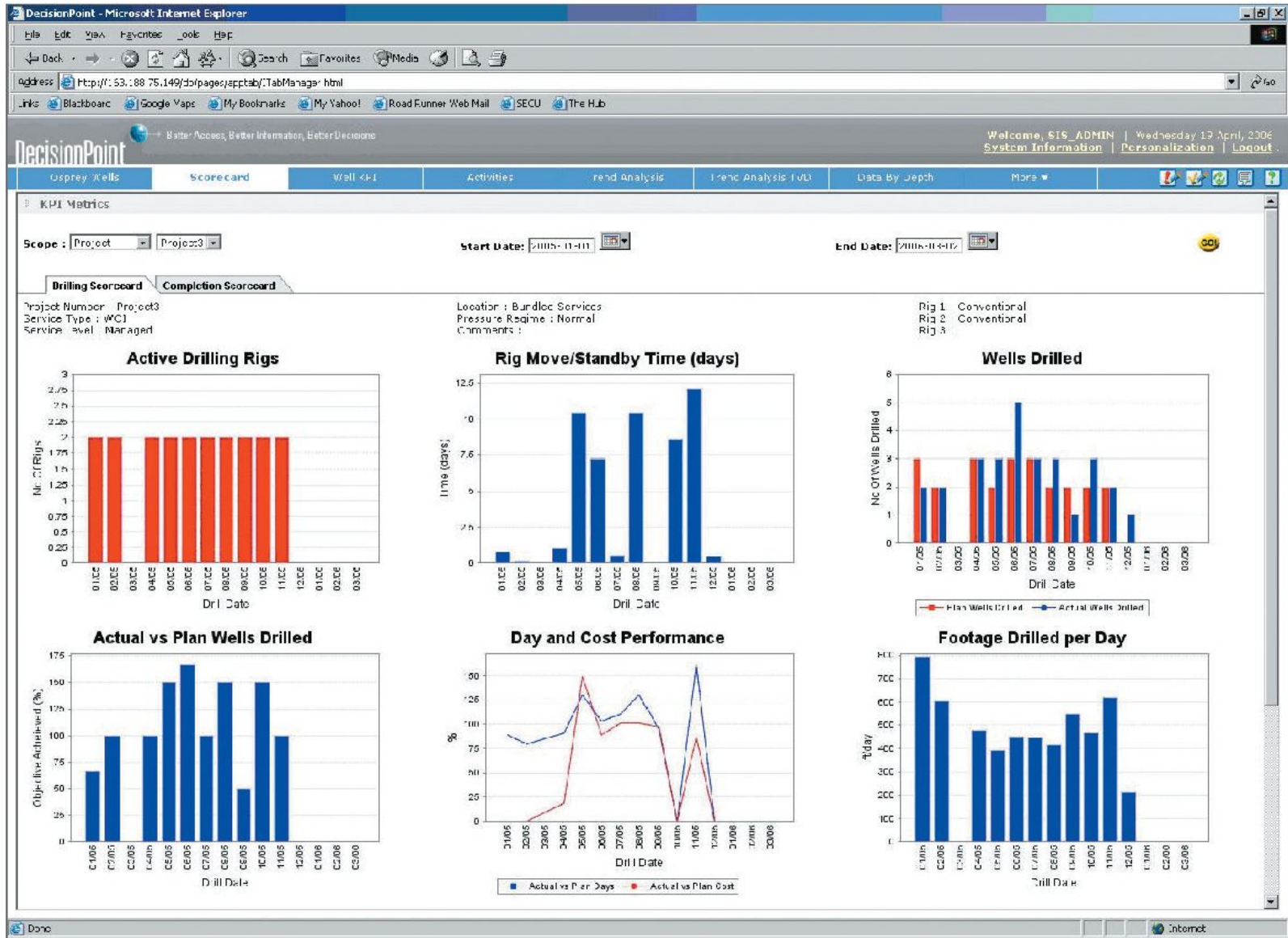
	Task Name	Low P% Time	Mid P% Time	High P% Time	Low P% Cost	Mid P% Cost	High P% Cost
1	Total	38.78	54.69	78.67	11,076	13,253	16,483
2	Mobilize Rig Job	1.68	2.39	3.51	151	215	316
3	Drill Wellbore Job	34.33	48.34	69.36	10,506	12,508	15,466
4	Well Completion Job	0.55	0.79	1.16	219	244	283
5	Demobilize Rig Job	2.22	3.17	4.64	199	285	418



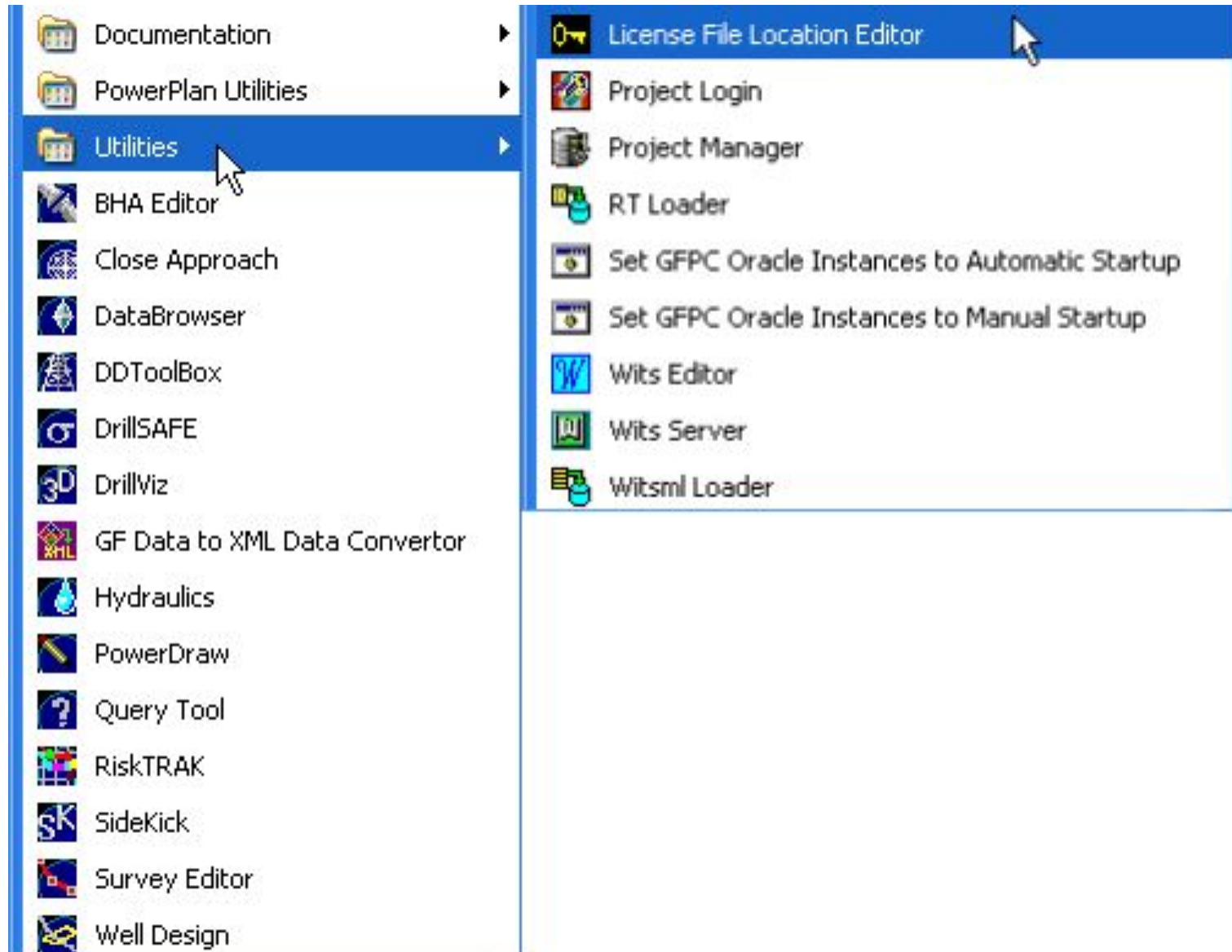
ДИНАМИЧЕСКОЕ УПРАВЛЕНИЕ БУРЕНИЕМ СКВАЖИНЫ НА БАЗЕ OSPREY OPERATIONS MANAGER



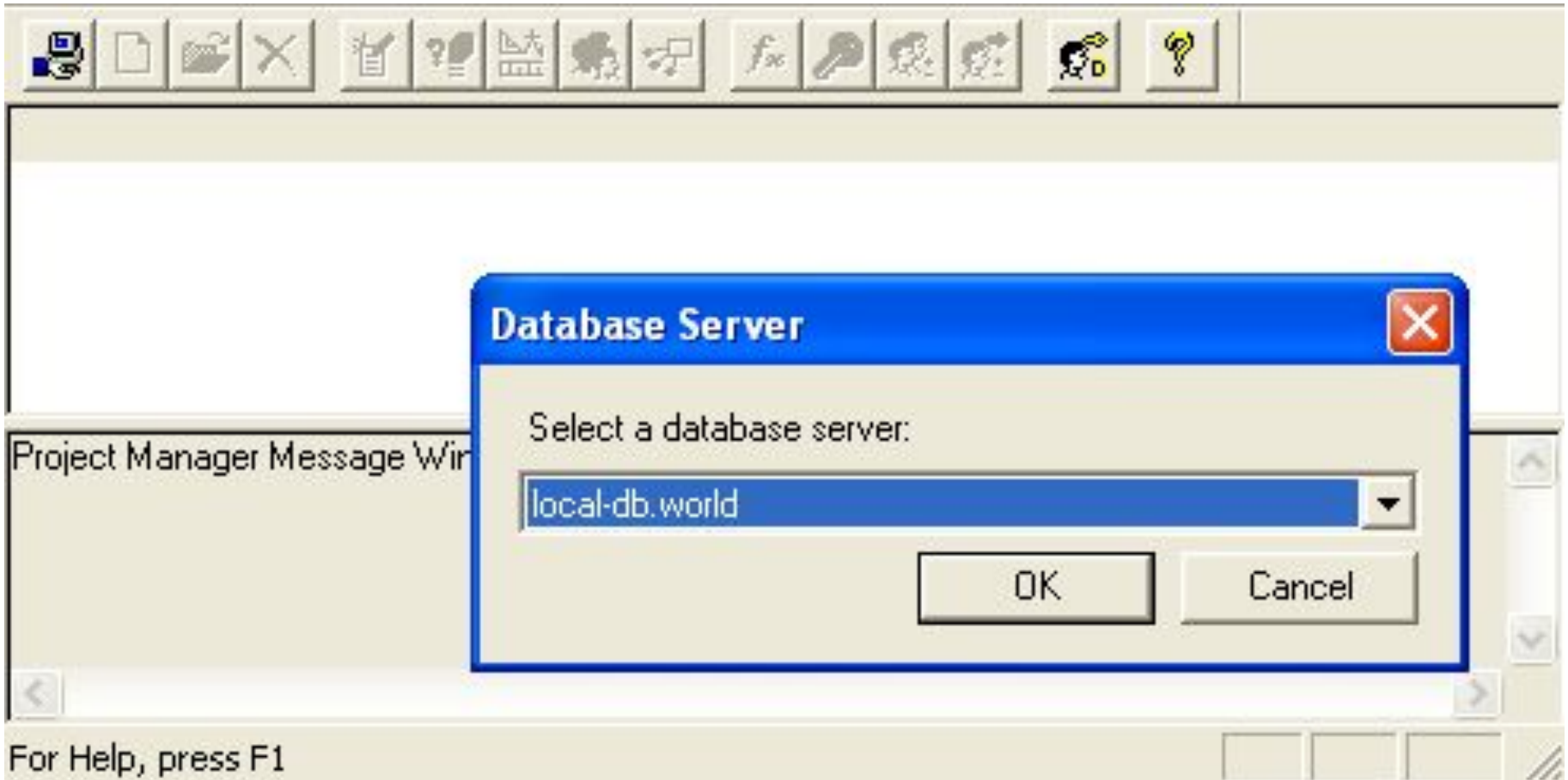
ДАННЫЕ, ОТСЛЕЖИВАЕМЫЕ OSPRAY OPERATIONS MANAGER



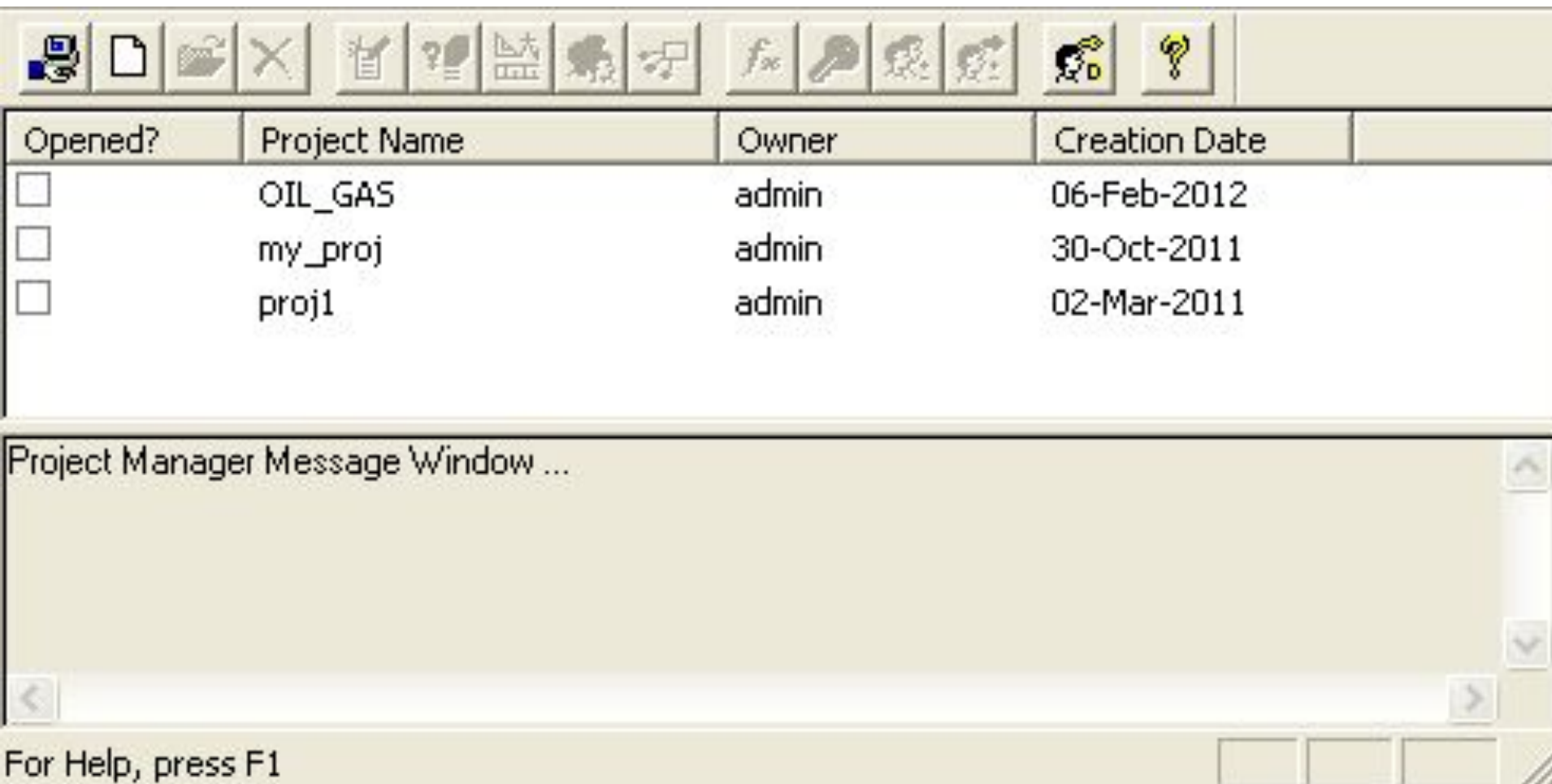
СТРУКТУРА ИНЖЕНЕРНОГО ПАКЕТА DRILLING OFFICE



PROJECT MANAGER – ВЫБОР СЕРВЕРА БАЗЫ ДАННЫХ



PROJECT MANAGER – ВЫБОР СУЩЕСТВУЮЩЕГО ПРОЕКТА



The screenshot displays the Project Manager application interface. At the top is a toolbar with various icons for file operations and project management. Below the toolbar is a table listing existing projects. The table has four columns: 'Opened?' (checkboxes), 'Project Name', 'Owner', and 'Creation Date'. Three projects are listed: 'OIL_GAS' (created 06-Feb-2012), 'my_proj' (created 30-Oct-2011), and 'proj1' (created 02-Mar-2011). Below the table is a 'Project Manager Message Window' which is currently empty. At the bottom of the window, there is a status bar with the text 'For Help, press F1' and some empty buttons.

Opened?	Project Name	Owner	Creation Date
<input type="checkbox"/>	OIL_GAS	admin	06-Feb-2012
<input type="checkbox"/>	my_proj	admin	30-Oct-2011
<input type="checkbox"/>	proj1	admin	02-Mar-2011

Project Manager Message Window ...

For Help, press F1

PROJECT MANAGER – СОЗДАНИЕ НОВОГО ПРОЕКТА



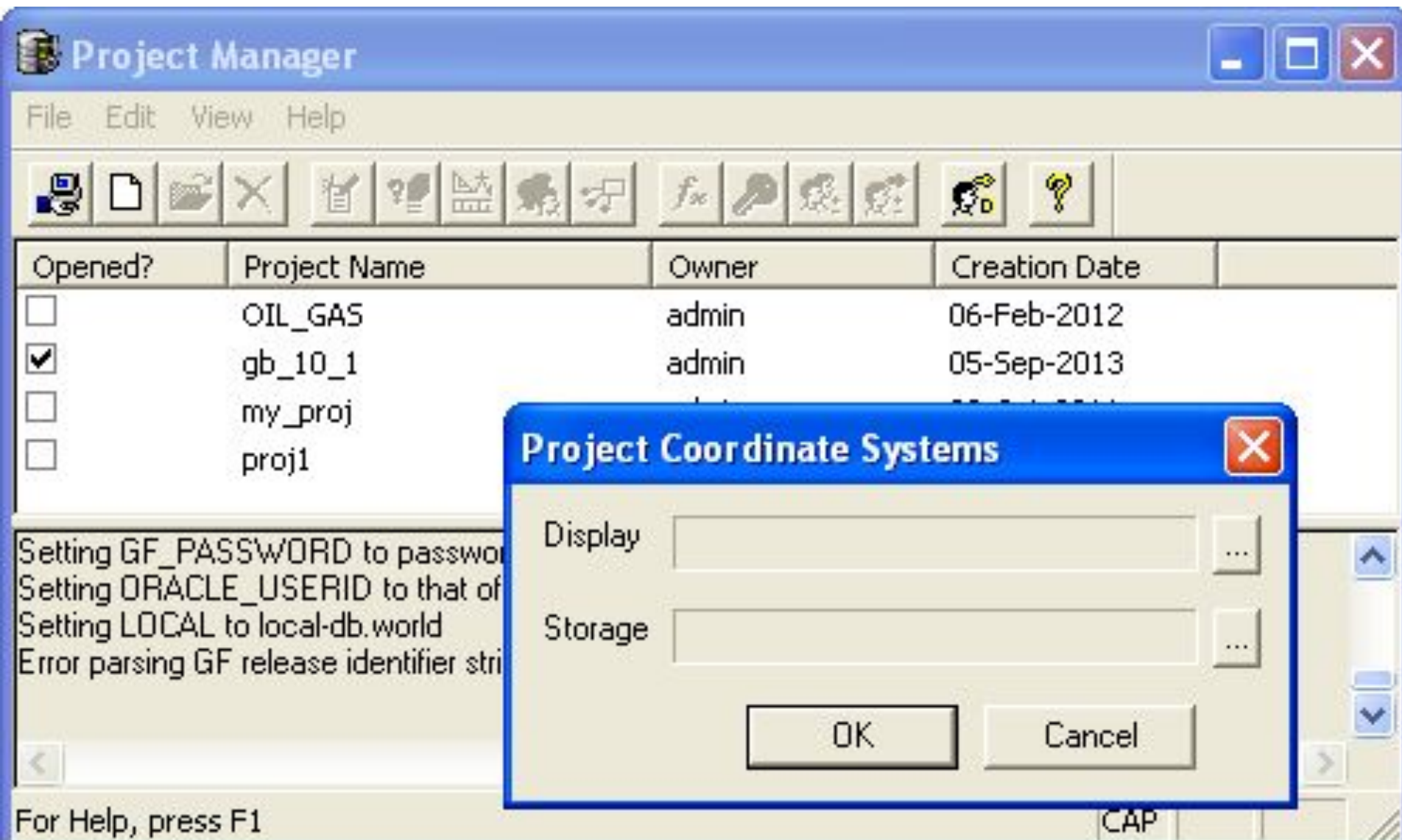
New Project Name

Catalog

Password

Password Verification

PROJECT MANAGER – ЗАДАНИЕ СИСТЕМЫ КООРДИНАТ ДЛЯ НОВОГО ПРОЕКТА



The screenshot shows the 'Project Manager' application window. The title bar reads 'Project Manager'. The menu bar includes 'File', 'Edit', 'View', and 'Help'. The toolbar contains various icons for file operations and project management. Below the toolbar is a table with the following columns: 'Opened?', 'Project Name', 'Owner', and 'Creation Date'. The table lists four projects: 'OIL_GAS' (not opened, created 06-Feb-2012), 'gb_10_1' (checked, created 05-Sep-2013), 'my_proj', and 'proj1'. A dialog box titled 'Project Coordinate Systems' is open in the foreground, featuring two input fields labeled 'Display' and 'Storage', each with a browse button ('...'). At the bottom of the dialog are 'OK' and 'Cancel' buttons. The background window shows a status bar with 'For Help, press F1' and 'CAP'.

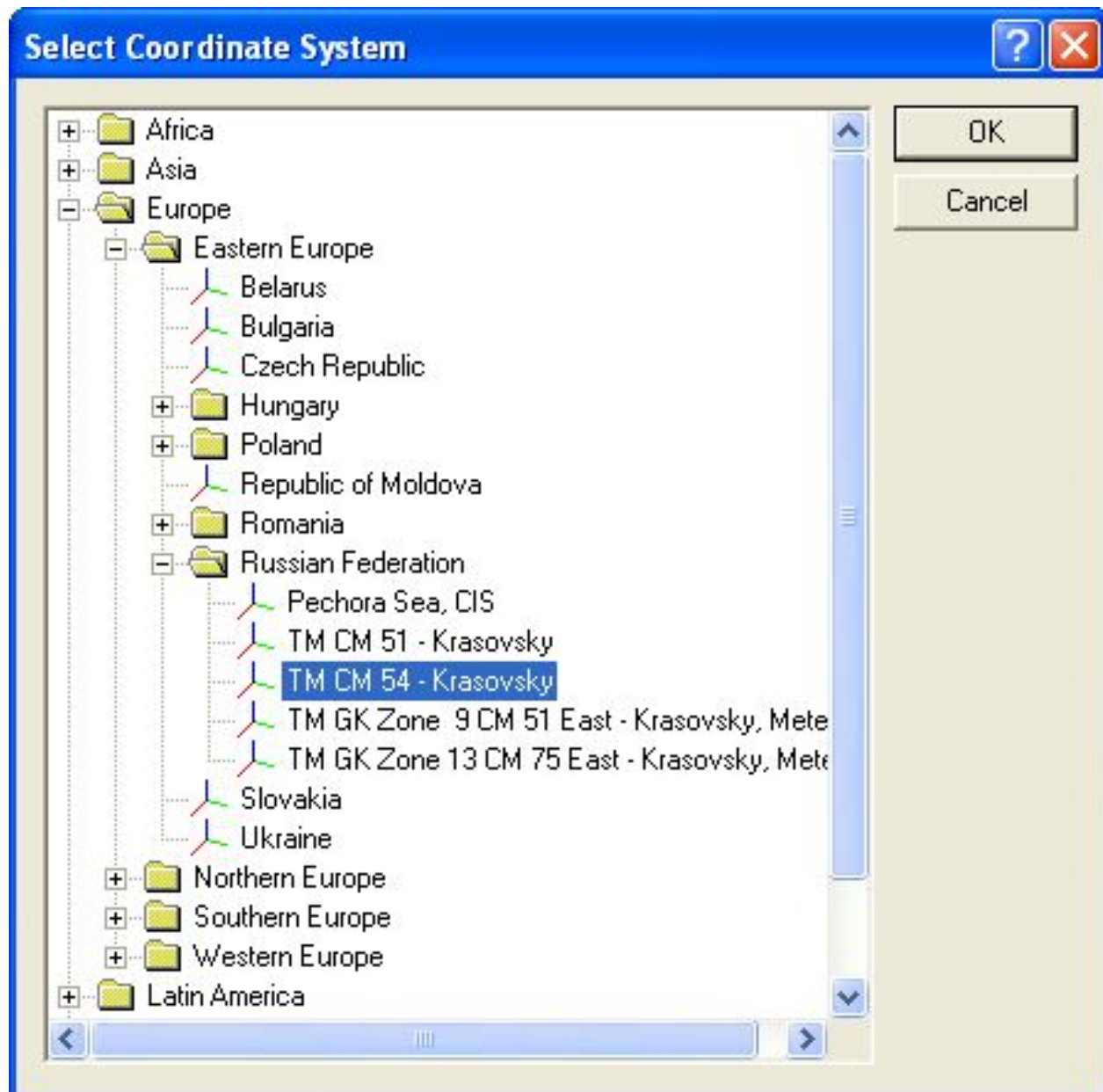
Opened?	Project Name	Owner	Creation Date
<input type="checkbox"/>	OIL_GAS	admin	06-Feb-2012
<input checked="" type="checkbox"/>	gb_10_1	admin	05-Sep-2013
<input type="checkbox"/>	my_proj		
<input type="checkbox"/>	proj1		

Setting GF_PASSWORD to password
Setting ORACLE_USERID to that of
Setting LOCAL to local-db.world
Error parsing GF release identifier stri

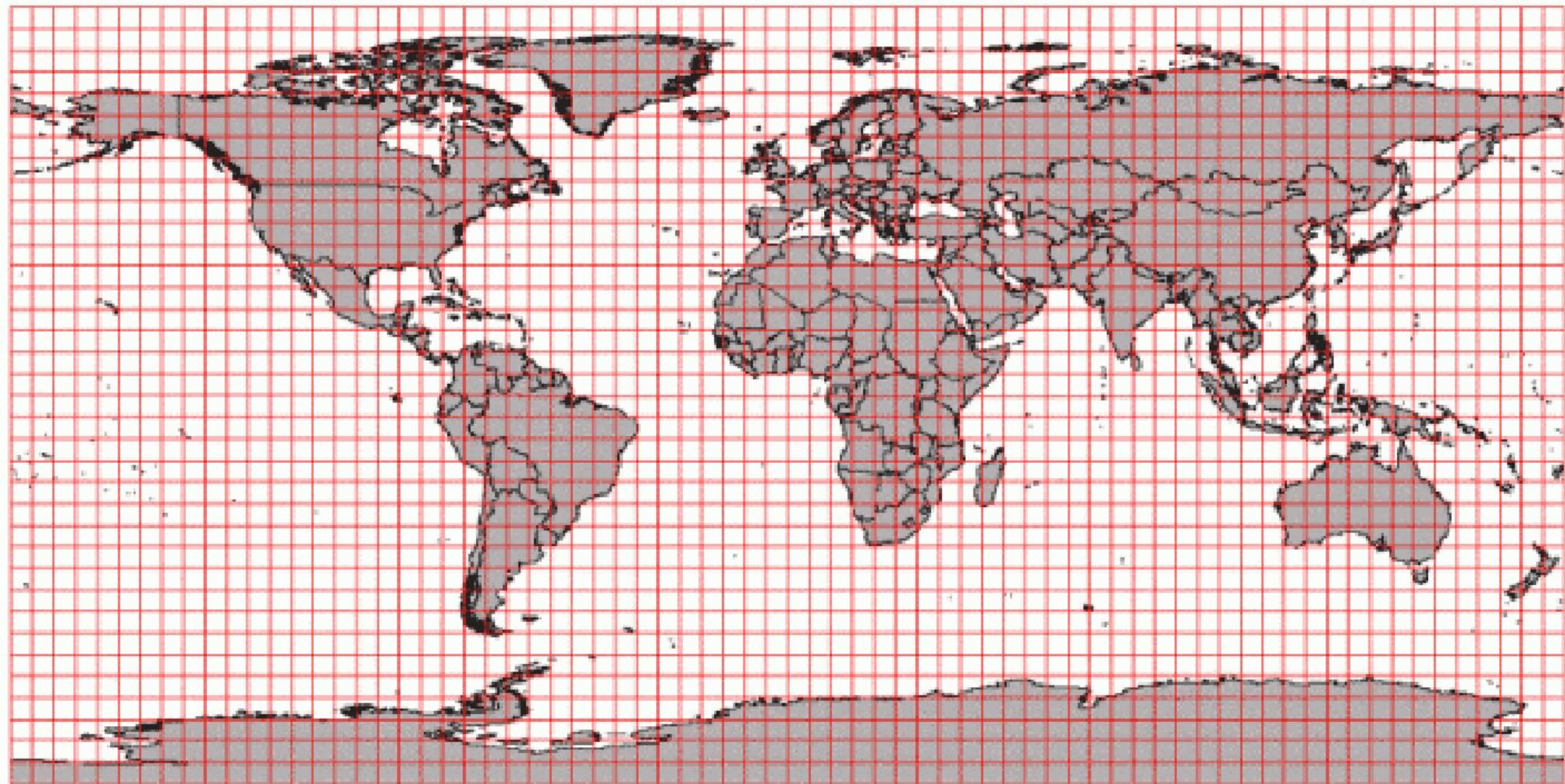
For Help, press F1

CAP

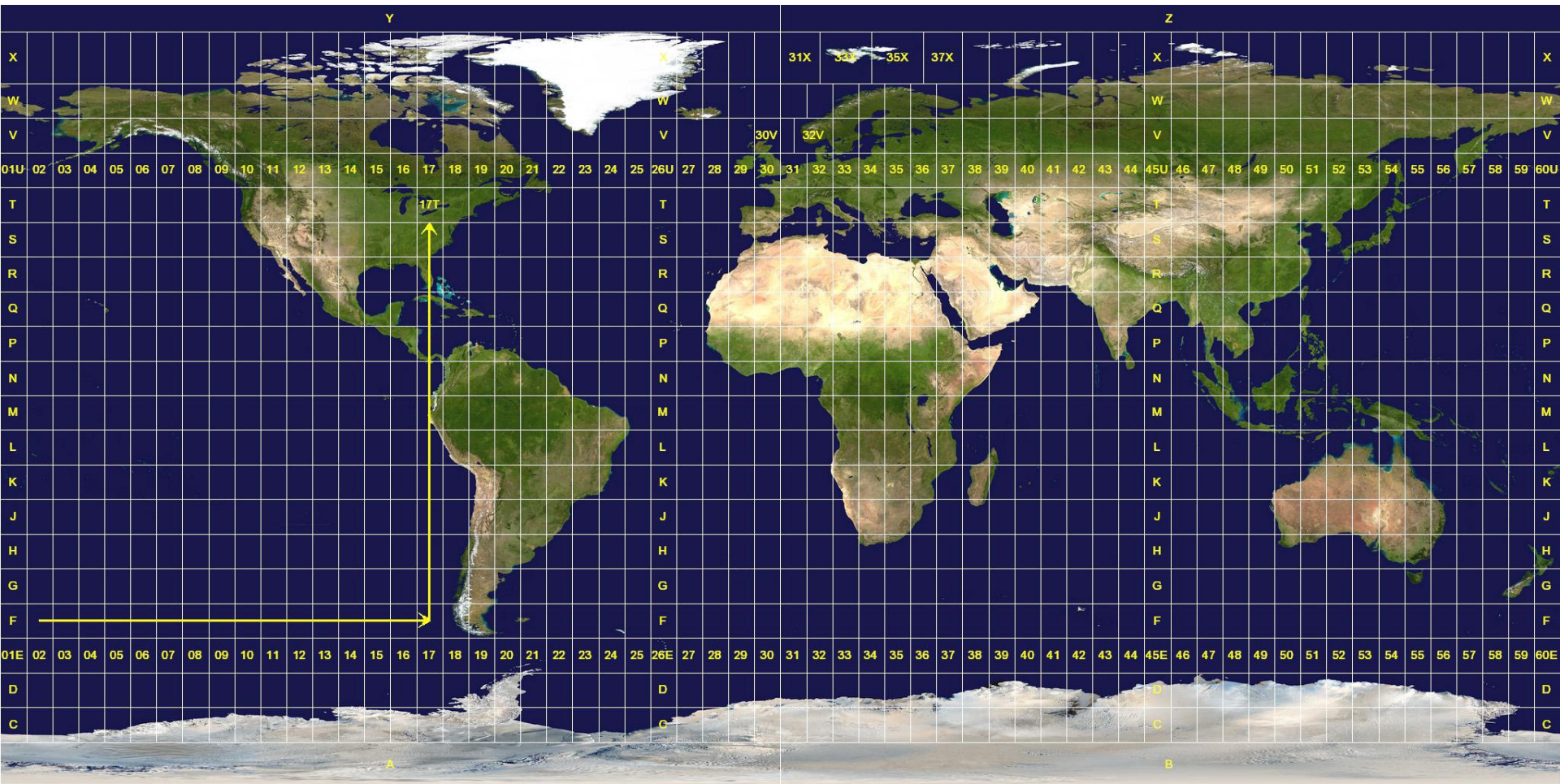
PROJECT MANAGER – ЗАДАНИЕ СИСТЕМЫ КООРДИНАТ ДЛЯ НОВОГО ПРОЕКТА



PROJECT MANAGER – ЗАДАНИЕ СИСТЕМЫ КООРДИНАТ ДЛЯ НОВОГО ПРОЕКТА



PROJECT MANAGER – СИСТЕМА КООРДИНАТ UTM



PROJECT MANAGER – ЗАДАНИЕ СИСТЕМЫ КООРДИНАТ ДЛЯ НОВОГО ПРОЕКТА

The screenshot shows the Oracle Project Manager application window. The main window has a menu bar (File, Edit, View, Help) and a toolbar with various icons. Below the toolbar is a table listing projects. The table has columns for 'Opened?', 'Project Name', 'Owner', and 'Creation Date'. The project 'gb_10_1' is selected with a checkmark. Below the table, there is a status bar with text: 'Setting GF_PASSWORD to password', 'Setting ORACLE_USERID to that of', 'Setting LOCAL to local-db.world', and 'Error parsing GF release identifier stri'. At the bottom left, it says 'For Help, press F1'. A dialog box titled 'Project Coordinate Systems' is open in the foreground, showing two input fields: 'Display' and 'Storage', both containing the text 'TMCM54'. There are 'OK' and 'Cancel' buttons at the bottom of the dialog box.

Opened?	Project Name	Owner	Creation Date
<input type="checkbox"/>	OIL_GAS	admin	06-Feb-2012
<input checked="" type="checkbox"/>	gb_10_1	admin	05-Sep-2013
<input type="checkbox"/>	my_proj		
<input type="checkbox"/>	proj1		

Setting GF_PASSWORD to password
Setting ORACLE_USERID to that of
Setting LOCAL to local-db.world
Error parsing GF release identifier stri

For Help, press F1

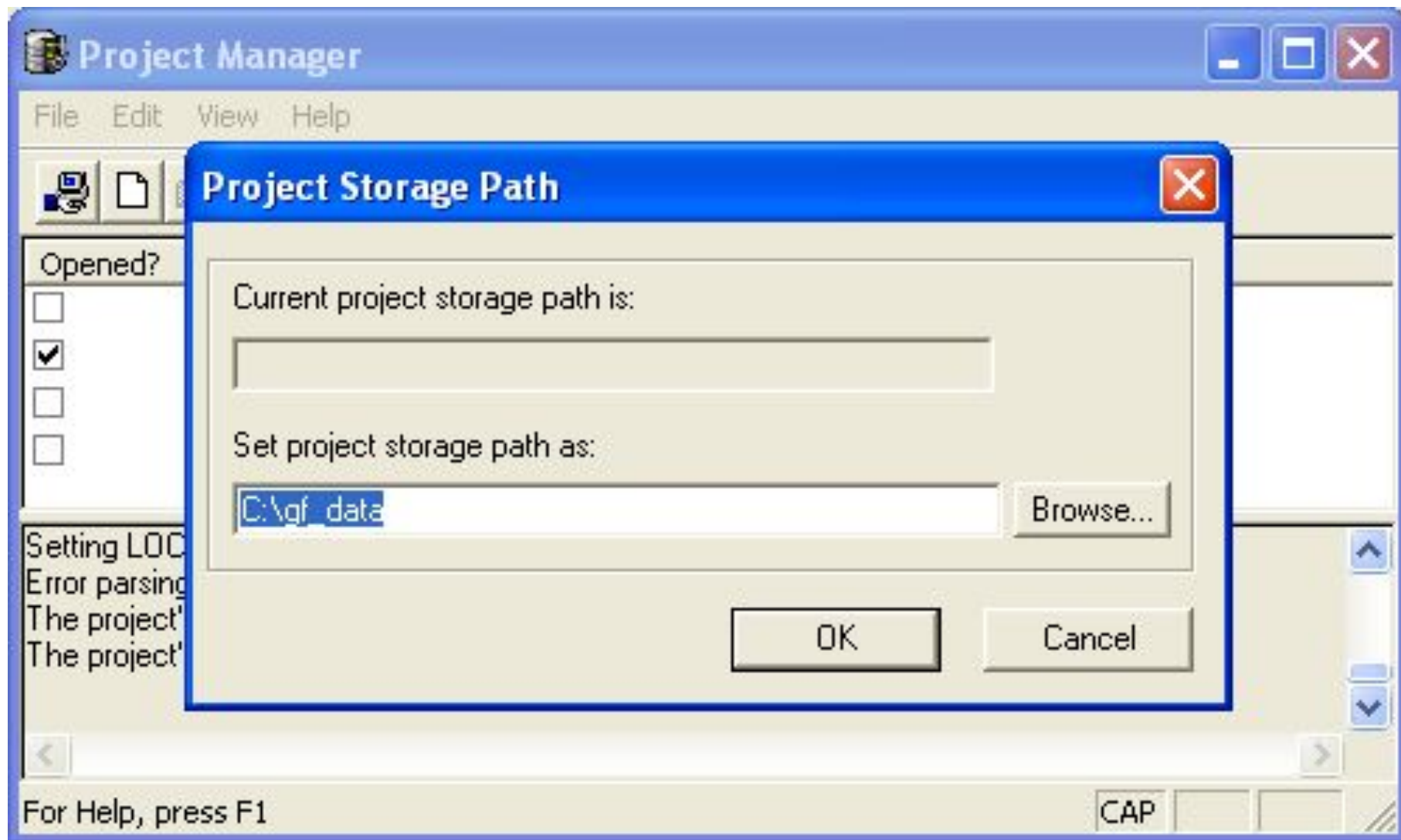
Project Coordinate Systems

Display: TMCM54

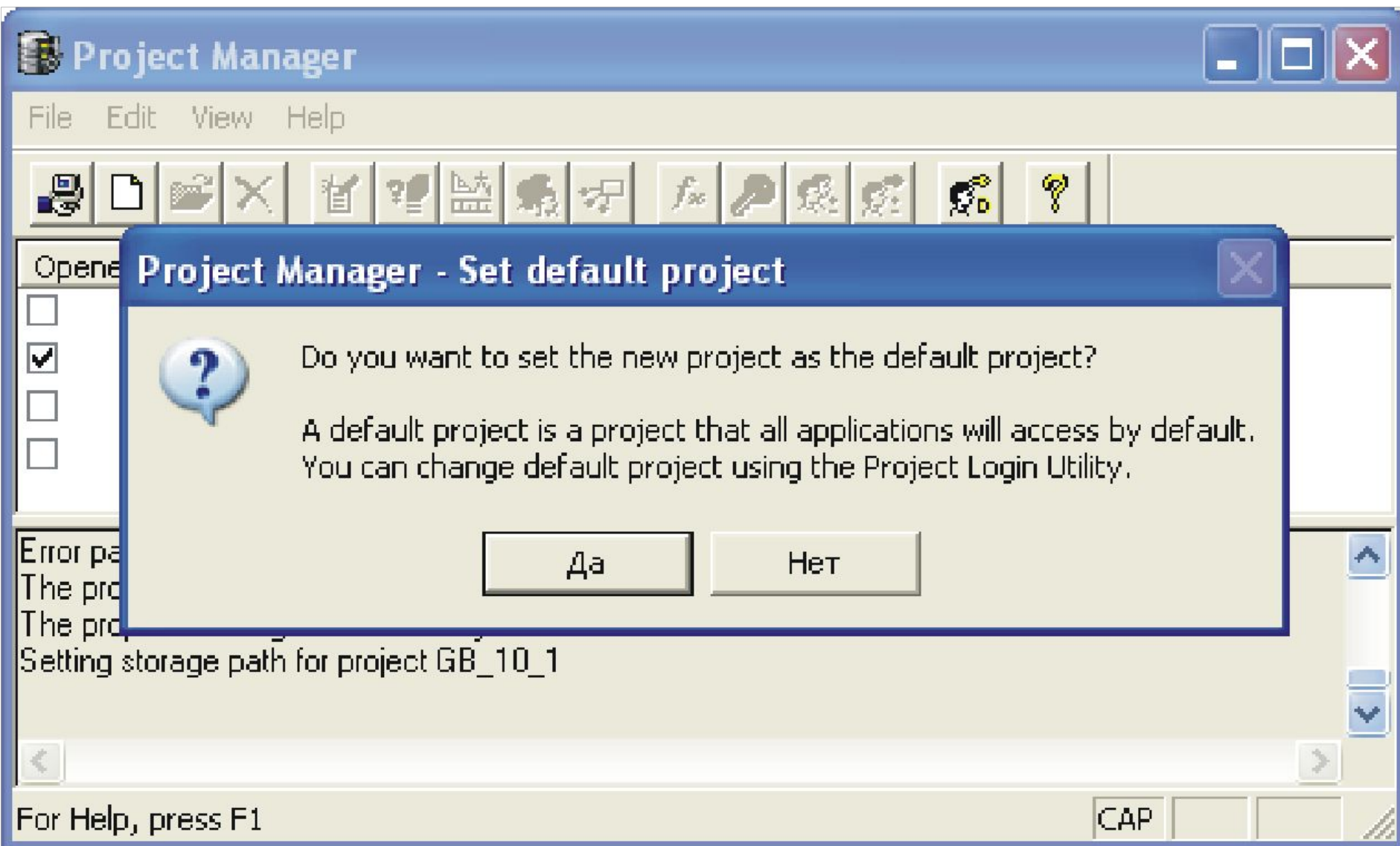
Storage: TMCM54

OK Cancel

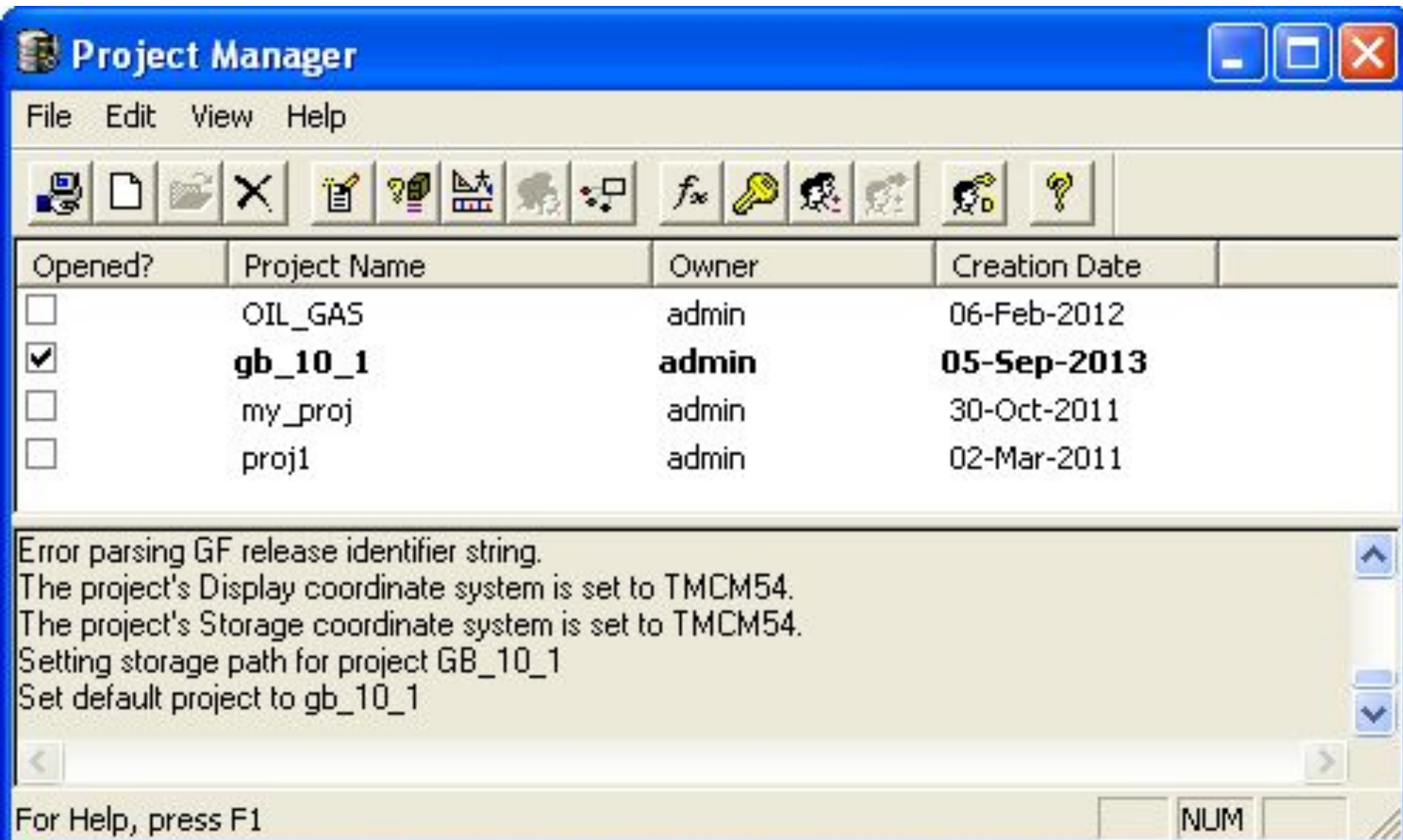
PROJECT MANAGER – ЗАДАНИЕ КАТАЛОГА ХРАНЕНИЯ ДАННЫХ ДЛЯ НОВОГО ПРОЕКТА



PROJECT MANAGER – ЗАДАНИЕ УМОЛЧАНИЙ ДЛЯ НОВОГО ПРОЕКТА



PROJECT MANAGER – РЕЗУЛЬТАТ ОТКРЫТИЯ НОВОГО ПРОЕКТА



The screenshot shows the 'Project Manager' application window. The title bar includes the application name and standard window controls. The menu bar contains 'File', 'Edit', 'View', and 'Help'. The toolbar features various icons for file operations and project management. The main area displays a table of projects with columns for 'Opened?', 'Project Name', 'Owner', and 'Creation Date'. The project 'gb_10_1' is selected. A status bar at the bottom indicates the current project and provides help information.

Opened?	Project Name	Owner	Creation Date
<input type="checkbox"/>	OIL_GAS	admin	06-Feb-2012
<input checked="" type="checkbox"/>	gb_10_1	admin	05-Sep-2013
<input type="checkbox"/>	my_proj	admin	30-Oct-2011
<input type="checkbox"/>	proj1	admin	02-Mar-2011

Error parsing GF release identifier string.
The project's Display coordinate system is set to TMCM54.
The project's Storage coordinate system is set to TMCM54.
Setting storage path for project GB_10_1
Set default project to gb_10_1

For Help, press F1

PROJECT MANAGER – НАСТРОЙКА СИСТЕМЫ ЕДИНИЦ ИЗМЕРЕНИЯ ПРОЕКТА



Project Unit Systems [X]

Current Project Unit System Settings

Display Unit System: Metric

Storage Unit System: ProductionMetric

Inspect Unit Systems

Select the type of unit system:

Display [v]

Select the base unit system for the selected type:

Metric [v]

OK Apply Cancel Details ...

PROJECT MANAGER – НАСТРОЙКА СИСТЕМЫ ЕДИНИЦ ИЗМЕРЕНИЯ ПРОЕКТА



Project Unit Systems [X]

Current Project Unit System Settings

Display Unit System: Metric

Storage Unit System: ProductionMetric

Inspect Unit Systems

Select the type of unit system:

Storage

Select the base unit system for the selected type:

ProductionMetric

OK Apply Cancel Details ...

ЗАДАНИЕ МЕСТОРОЖДЕНИЯ В МОДУЛЕ DATA BROWSER

Insert Field [X]

Field Data | Hardlines/Leaselines

Name: Zeus

Region: North America

Time Zone: (GMT-06:00) Central Time (US & Canada)

Coordinate System: UTM Zone 31 on ED50 Datum

Reference Point

Geodetic		Grid	
Latitude:	N 61 24 12.763 deg	Northing:	6808028.074 m
Longitude:	E 2 26 23.462 deg	Easting:	470087.703 m
Scale Factor:	0.99961096	Grid Convergence:	-0.49182187 deg

Elevation

Elevation Name: MSL

OK Cancel Help

ЗАДАНИЕ ПЛОЩАДИ В МОДУЛЕ DATA BROWSER

Edit Structure [X]

Structure Data | Slots

Name: Client:

Coordinate System: ...

Time Zone:

Location

Azimuth Reference: Grid North True North

Plan to: Slot Structure

Geodetic

Latitude: deg

Longitude: deg

Grid

Northing: m

Easting: m

Local Cartesian

+N/-S: ft

+E/-W: ft

Local Polar

Distance: ft

Azimuth: deg

Scale Factor: Grid Convergence: deg

Surface Uncertainty

Radius: ft

Default Survey Tool Error Model

Model Name:

Elevation (Positive up)

Elevation Name: ft relative to MSL

Sea Bed/Ground Level: ft relative to MSL

OK Cancel Help

ЗАДАНИЕ СКВАЖИНЫ В МОДУЛЕ DATA BROWSER

Insert Well [X]

Well Data | Administrative Data

Name: API#:

Coordinate System: UWI#:

Assigned Slot:

Location

Reference: Azimuth Reference:

Geodetic		Grid	
Latitude:	<input type="text" value="N 61 24 12.763"/> deg	Northing:	<input type="text" value="6808028.07"/> m
Longitude:	<input type="text" value="E 2 26 23.492"/> deg	Easting:	<input type="text" value="470088.148"/> m

Local Cartesian		Local Polar	
+N/-S:	<input type="text" value="0"/> ft	Distance:	<input type="text" value="0"/> ft
+E/-W:	<input type="text" value="0"/> ft	Azimuth:	<input type="text" value="0"/> deg

Scale Factor: Grid Convergence: deg

Elevation (Positive up)

Elevation Name:

<input type="text" value="-115"/>	ft	relative to Platform Elevation
<input type="text" value="5"/>	ft	relative to MSL
<input type="text" value="115"/>	ft	relative to Sea Bed/ Ground Level

OK Cancel Help

ЗАДАНИЕ СТВОЛА В МОДУЛЕ DATA BROWSER

Insert Borehole [X]

Borehole Data | Targets | Hardlines/Leaselines

Name: API#:

Rig: Edit ... UWI#:

Drilling Contractor: Edit ...

Elevation (Positive up)

Elevation Name: <input type="text" value="RKB"/>	<input type="text" value="147.7"/>	ft relative to Top of Slot
	<input type="text" value="32.7"/>	ft relative to Platform Elevation
	<input type="text" value="152.7"/>	ft relative to MSL
	<input type="text" value="262.7"/>	ft relative to Sea Bed/ Ground Level

Data

Begin MD: ft End MD: ft

Definitive Survey: ... Clear

Well Info

Well Purpose: Well Type:

OK Cancel Help

ЗАДАНИЕ ЦЕЛИ БУРЕНИЯ В МОДУЛЕ DATA BROWSER

Create Target [?] [X]

Name:

Remark:

Location

Azimuth Reference: Grid North True North

Geodetic		Grid	
Latitude:	<input type="text" value="N 61 24 32.281"/> deg	Northing:	<input type="text" value="6808622.507"/> m
Longitude:	<input type="text" value="E 2 27 39.437"/> deg	Easting:	<input type="text" value="471219.655"/> m

Local Cartesian		Local Polar	
+N/-S:	<input type="text" value="1951"/> ft	Distance:	<input type="text" value="4196.321"/> ft
+E/-W:	<input type="text" value="3715.2"/> ft	Azimuth:	<input type="text" value="62.294"/> deg

Scale Factor: Grid Convergence: deg

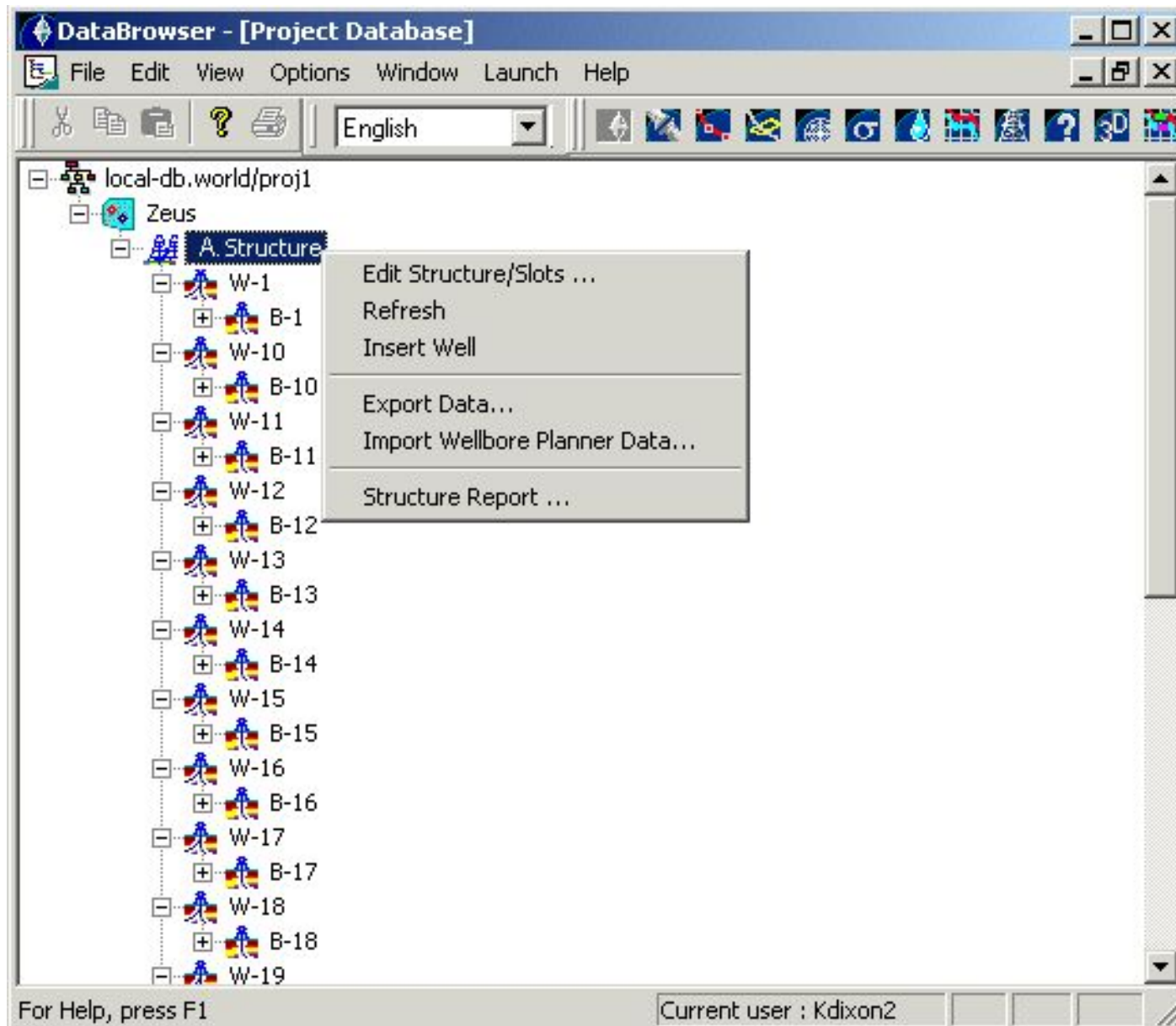
TVD: ft Below MSL

Geometry

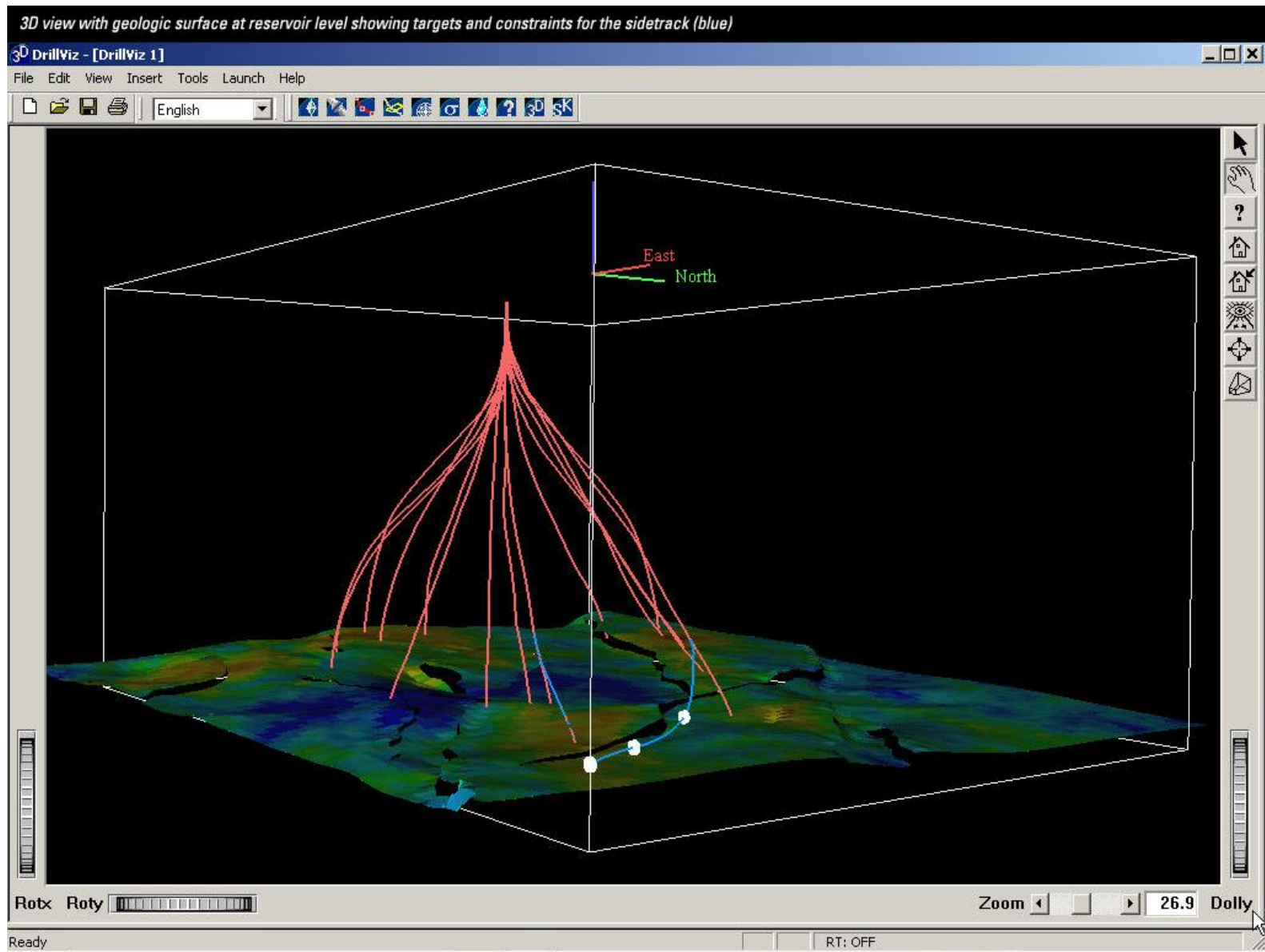
Shape:

Length (NS):	<input type="text" value="50"/> ft	Thickness:	<input type="text" value="10"/> ft
Width (EW):	<input type="text" value="30"/> ft	Dip:	<input type="text" value="0"/> deg
Rotation:	<input type="text" value="0"/> deg	Dip Azimuth:	<input type="text" value="0"/> deg

СТРУКТУРА ДАННЫХ В МОДУЛЕ DATA BROWSER



РЕЗУЛЬТАТЫ РАБОТЫ DRILLVIZ



ВВОД ДАННЫХ ПО СКВАЖИНЕ В МОДУЛЬ HYDRAULICS

Hydro - Hydraulics Inputs

File Edit View Options Window Launch Help

English

Hydraulics Inputs

BHA: BHA (Horizontal) 2442.9 ft

Well Geom: Well Geometry #1 14089.0 ft Filter

Survey: Tutorial #1 14089.3 ft

Bit Depth: 14089.33 ft

Run Plots

Run Report

Rheology Bit/Flow Rig Tools/Misc Motor Cuttings Swab/Surge

Settings

Model Power Law Use PV-YP P-T Off

Properties

Mud Weight 0 lbm/gal

Consistency Index (K) -1 eq. cP

Flow Behavior Index (n) -1

Plastic Viscosity 0 cP

Yield Point 0 lbf/100ft2

Fann 300 0 lbf/100ft2

Fann 600 0 lbf/100ft2

Zeus -> A. Structure -> Slot #13 -> W-13 -> B-13 -> Plan

Current user : Kdixon2

ВВОД ДАННЫХ ПО РЕОЛОГИИ В МОДУЛЬ HYDRAULICS

Rheology | Bit/Flow | Rig | Tools/Misc | Motor | Cuttings | Swab/Surge

Settings

Model: Use: P-T:

Properties

Mud Weight	<input type="text" value="10"/>	lbm/gal	Fann 3	<input type="text" value="6"/>	lbf/100ft ²
Consistency Index (K)	<input type="text" value="827.1"/>	eq. cP	Fann 6	<input type="text" value="8"/>	lbf/100ft ²
Flow Behavior Index (n)	<input type="text" value="0.481"/>		Fann 100	<input type="text" value="23"/>	lbf/100ft ²
Yield Point	<input type="text" value="2.46"/>	lbf/100ft ²	Fann 200	<input type="text" value="31"/>	lbf/100ft ²
<input checked="" type="checkbox"/> Use Fann Data			Fann 300	<input type="text" value="37"/>	lbf/100ft ²
			Fann 600	<input type="text" value="51"/>	lbf/100ft ²

ВВОД ДАННЫХ ПО РАСХОДАМ В МОДУЛЬ HYDRAULICS

Rheology | Bit/Flow | Rig | Tools/Misc | Motor | Cuttings | Swab/Surge

Pump / Flow

Pump Flowrate gal/min

Plot: Min Flow gal/min

Plot: Max Flow gal/min

Pump Stroke Volume bbl

Max Pump Pressure psi

Sensitivity

Min Flow gal/min

Max Flow gal/min

Nozzles

Count	Size (1/32")
<input type="text" value="3"/>	<input type="text" value="15"/>

Total Flow Area in²

Nozzle Optimization

Method

Planned Pump Press psi

ВВОД ДАННЫХ ПО ОБОРУДОВАНИЮ В МОДУЛЬ HYDRAULICS

Rheology | Bit/Flow | Rig | Tools/Misc | Motor | Cuttings | Swab/Surge

Surface Equipment

Type

Equiv Length

ft

Equiv ID

in

Choke

Riser required to activate this option

Chokeline ID

in

Chokeline Length

ft

Choke Position

(0-1)

Riserless Drilling

Use WG filter to expose hole to sea

Air Gap

ft

Water Depth

ft

Sea Water Density

lbm/gal

ВВОД ДАННЫХ ПО ИНСТРУМЕНТУ В МОДУЛЬ HYDRAULICS

Rheology | Bit/Flow | Rig | Tools/Misc | Motor | Cuttings | Swab/Surge

Non-Catalog Tool Pressure Drop psi/gal/min

None	0
None	0
None	0
None	0
None	0

Miscellaneous

Ignore Eccentricity

User ECD Depth (MD) ft

Casing Protectors

Casing Protectors

Start Depth (MD) ft

End Depth (MD) ft

Count

Length ft

External Diameter in

Tool Joints

Tool Joints

Fractional TJ length %

ВВОД ДАННЫХ ПО ДВИГАТЕЛЮ В МОДУЛЬ HYDRAULICS

Rheology | Bit/Flow | Rig | Tools/Misc | **Motor** | Cuttings | Swab/Surge

Motor Specifications

Motor Type: A675M4570XP

Flow range: 300 - 600 gal/min

%Wear: 5 %

Rotor Nozzle: 12 /32in

Flow : Pwr 378.0 Nozz 72.0 gal/min

Motor Bearing Flow: 5 %

Bit Type: Insert

Bearing Capacity: 30 1000 lbf

Optimization

Power Drilling

WOB: 0 1000 lbf

DTOR: 0 ft.lbf

Delta P: 250 psi

On Bottom Press: 0 psi

ВВОД ДАННЫХ ПО ШЛАМУ В МОДУЛЬ HYDRAULICS

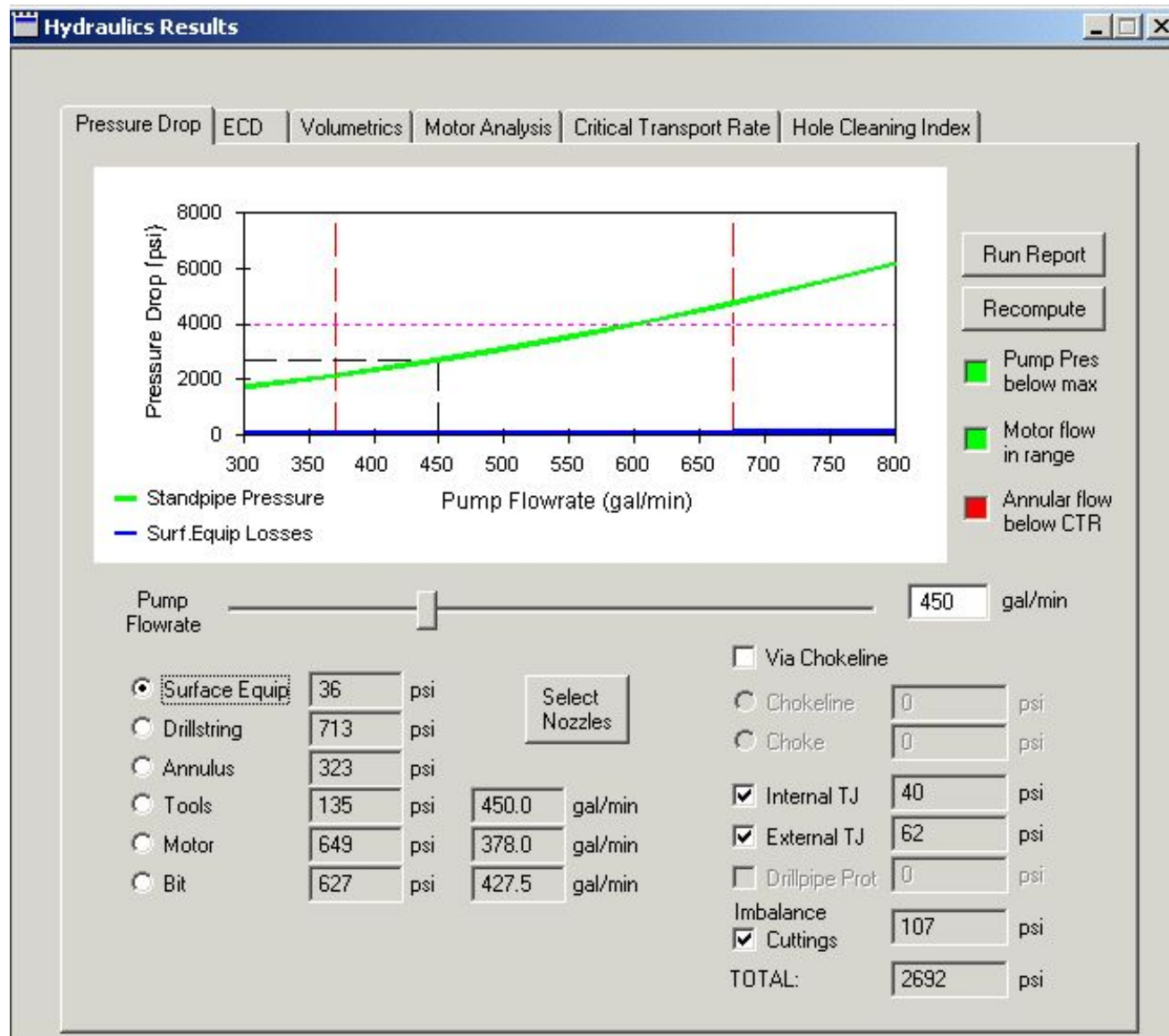
Rheology | Bit/Flow | Rig | Tools/Misc | Motor | **Cuttings** | Swab/Surge

Hole Cleaning Cuttings corrected ECD

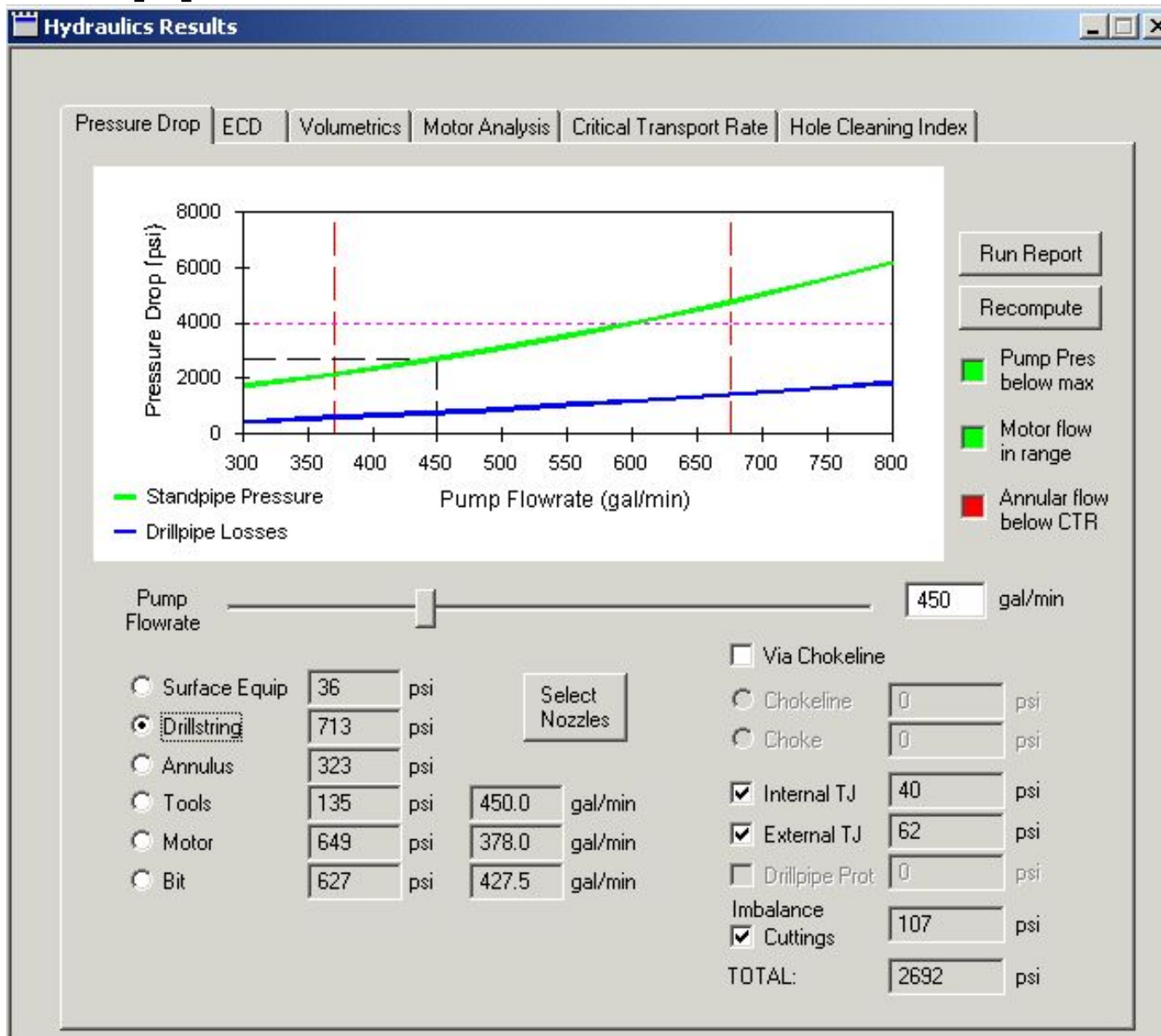
Parameters

Cuttings Type	Sand	
Mud Type	Synthetic/OBM	
RPM	50	
Rate of Penetration	150	ft/h
Cuttings Density	2.6	g/cm ³
Cuttings Size	Medium	
Boostline Rate:	0	gal/min

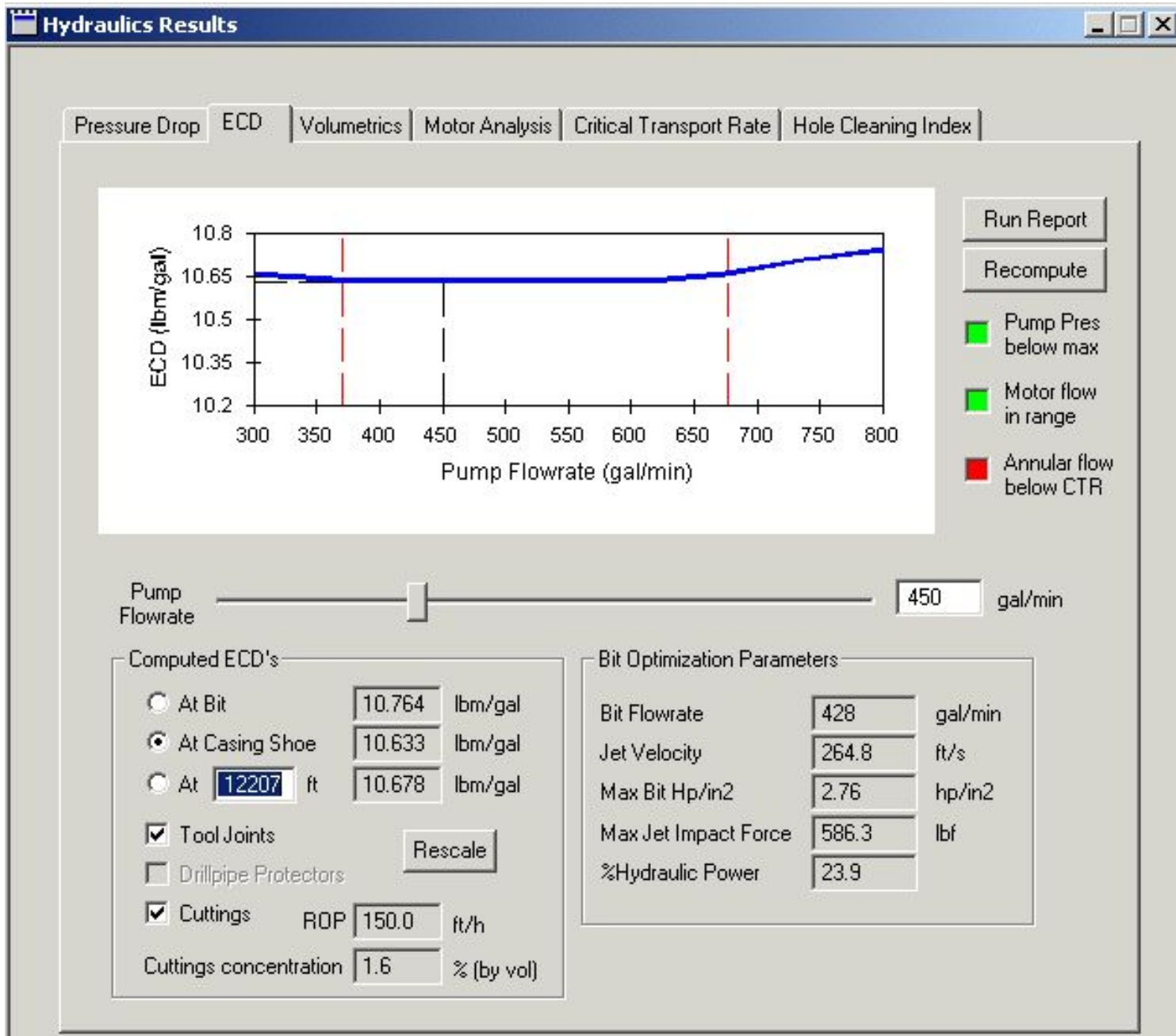
РЕЗУЛЬТАТЫ РАСЧЕТА ПОТЕРЬ ДАВЛЕНИЯ В ОБВЯЗКЕ



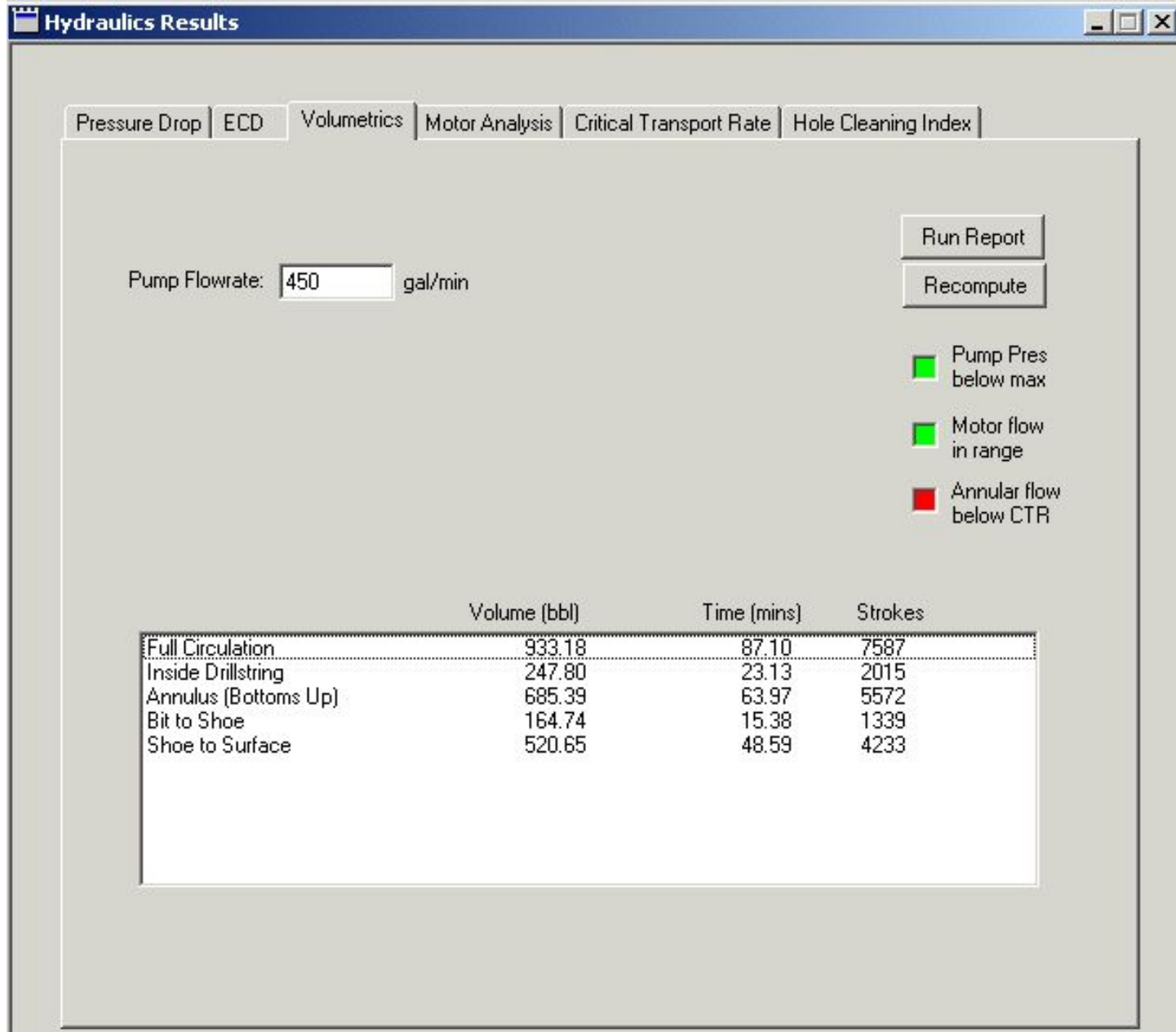
РЕЗУЛЬТАТЫ РАСЧЕТА ПОТЕРЬ ДАВЛЕНИЯ В ТРУБАХ



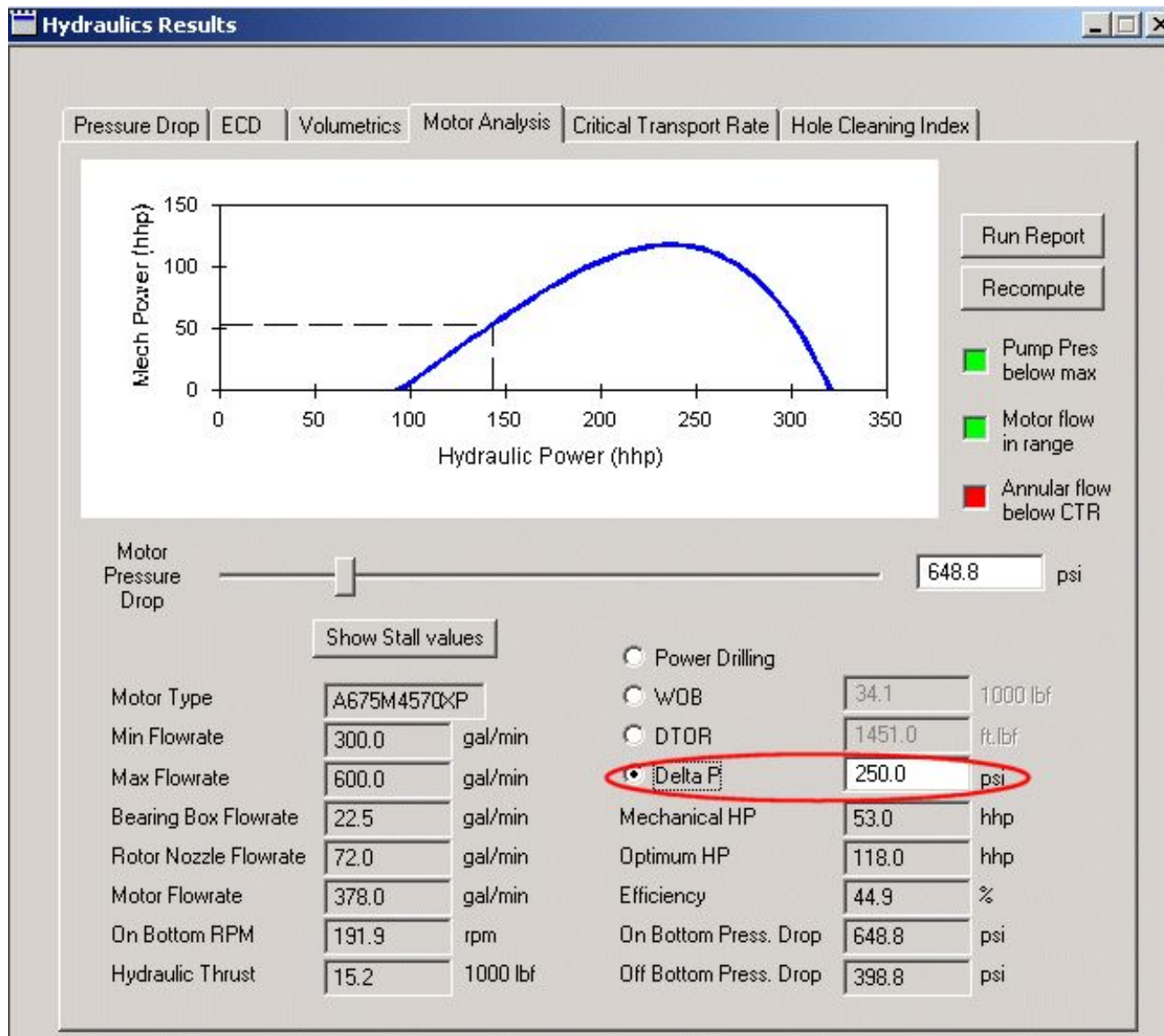
РЕЗУЛЬТАТЫ РАСЧЕТА ECD



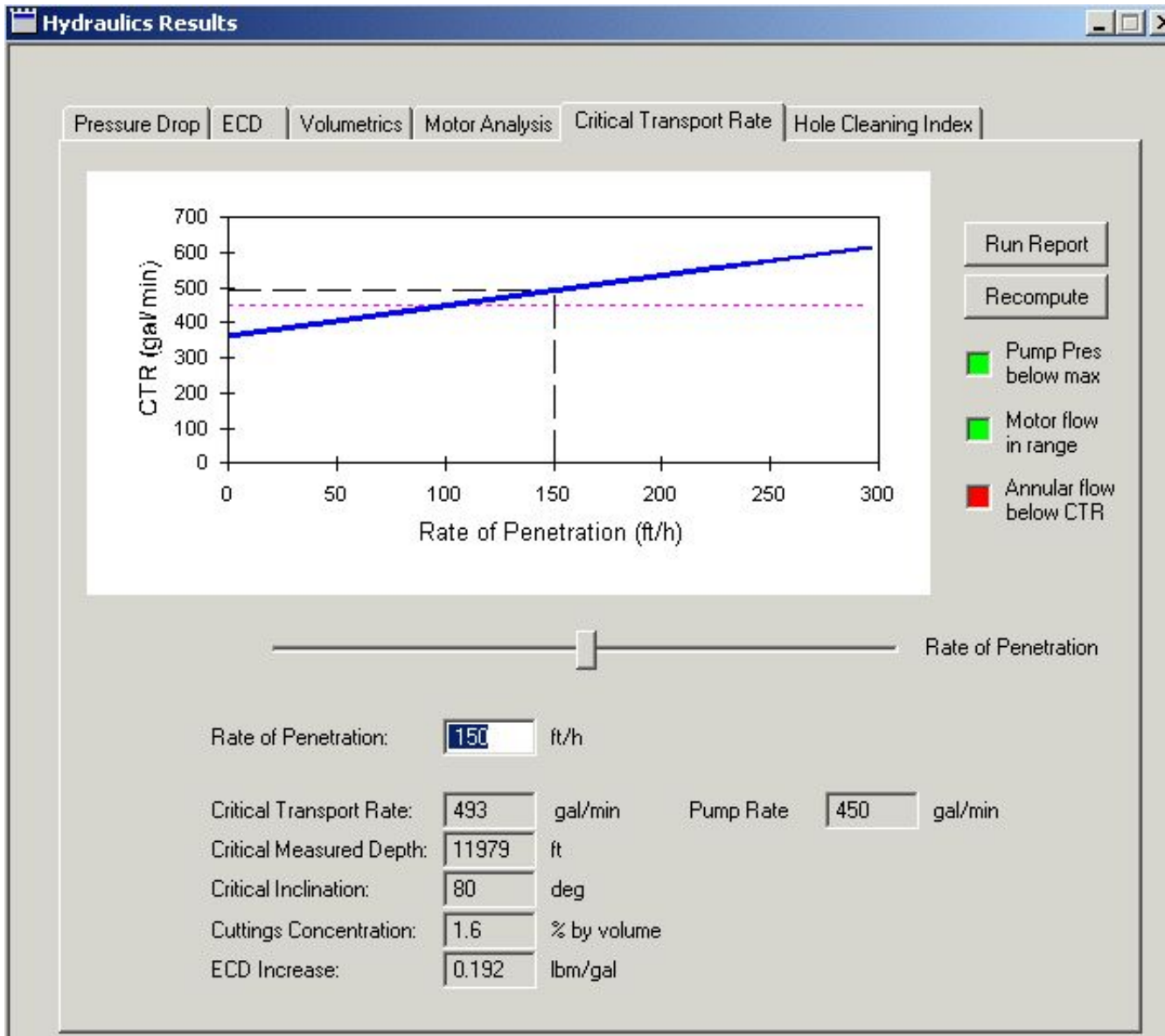
РЕЗУЛЬТАТЫ РАСЧЕТА ОБЪЕМОВ



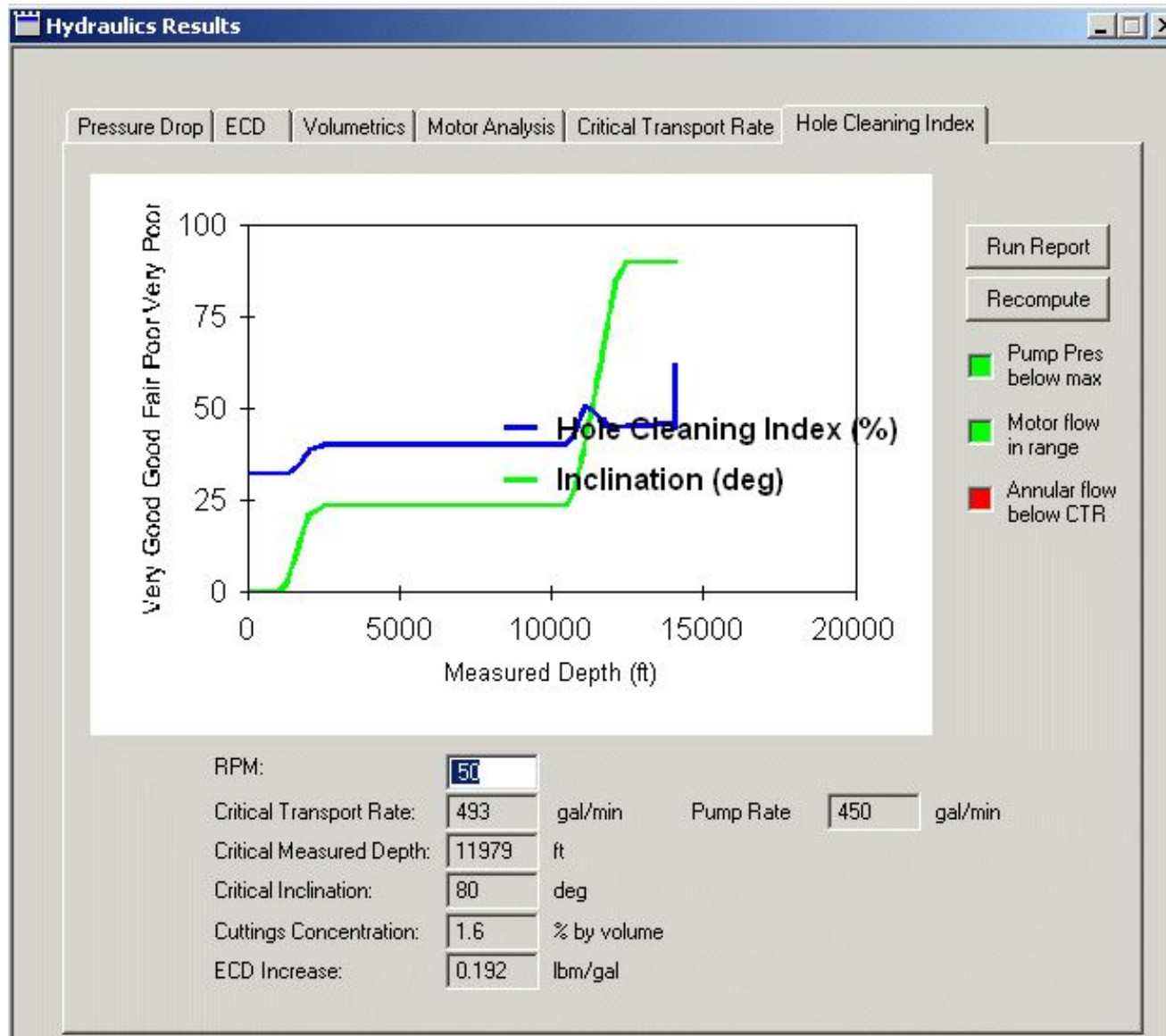
РЕЗУЛЬТАТЫ АНАЛИЗА РАБОТЫ ВЗД



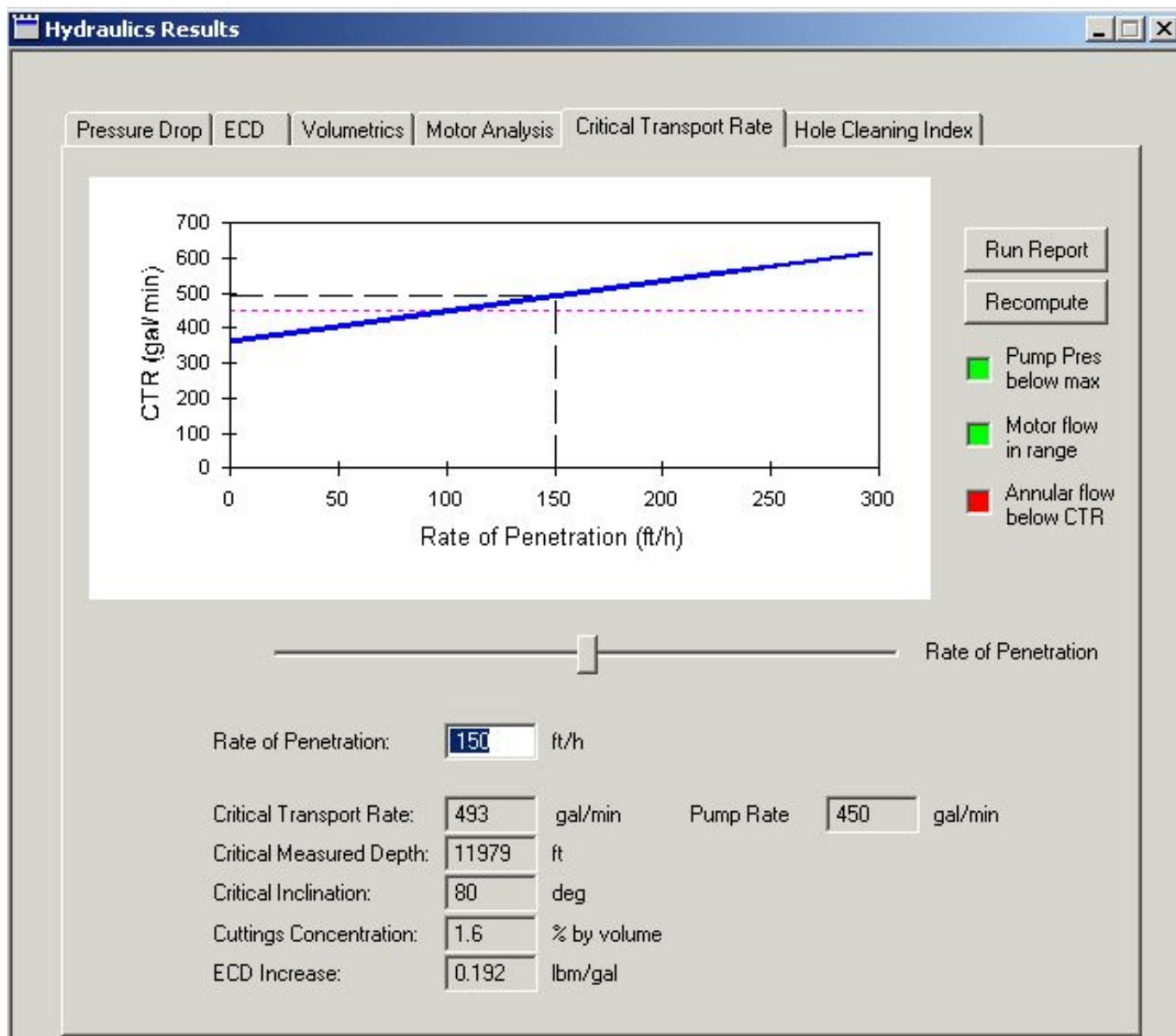
РЕЗУЛЬТАТЫ АНАЛИЗА ТРАНСПОРТА ШЛАМА



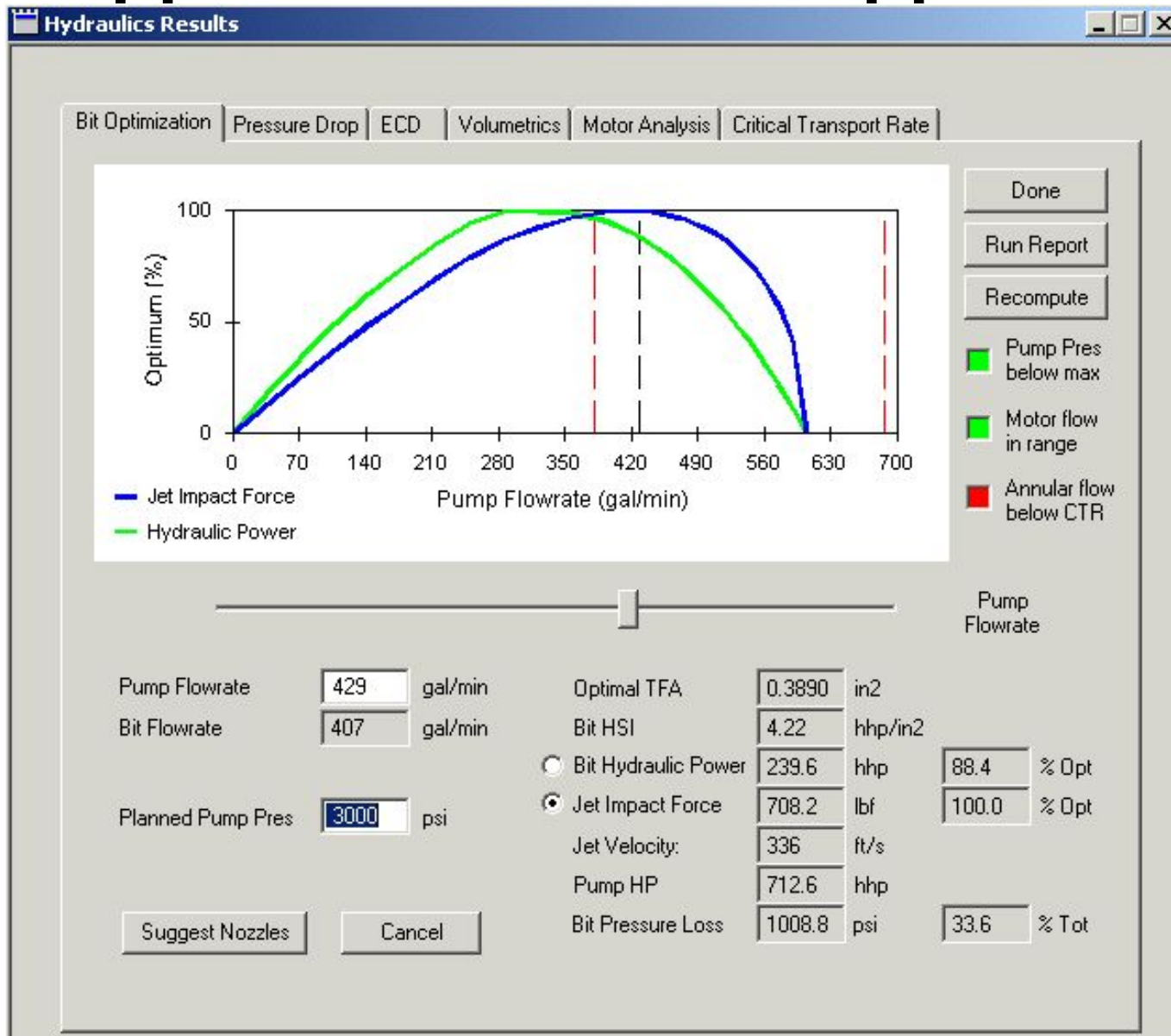
РЕЗУЛЬТАТЫ РАСЧЕТА ИНДЕКСА ОЧИСТКИ СТВОЛА



ОЦЕНКА ВЛИЯНИЯ РАСХОДА НА СКОРОСТЬ БУРЕНИЯ



РЕЗУЛЬТАТЫ ОПТИМИЗАЦИИ ДОЛОТНЫХ НАСАДОК



ЗАДАНИЕ ОПЦИЙ РАСЧЕТА ДАВЛЕНИЙ ПРИ СПО

Hydraulics Inputs - SwabSurge

Bit Depth: 20000 ft

BHA: demo 3031.0 ft
Well Geom: demo 20000.0 ft
Survey: demo 20000.0 ft

Rheology Bit/Flow Rig Tools/Misc Motor Cuttings Swab/Surge

Analysis Type
 User-Defined Tripping Schedule
 Margin-Based Tripping Schedule

Direction
 POOH
 RIH

Run
Report

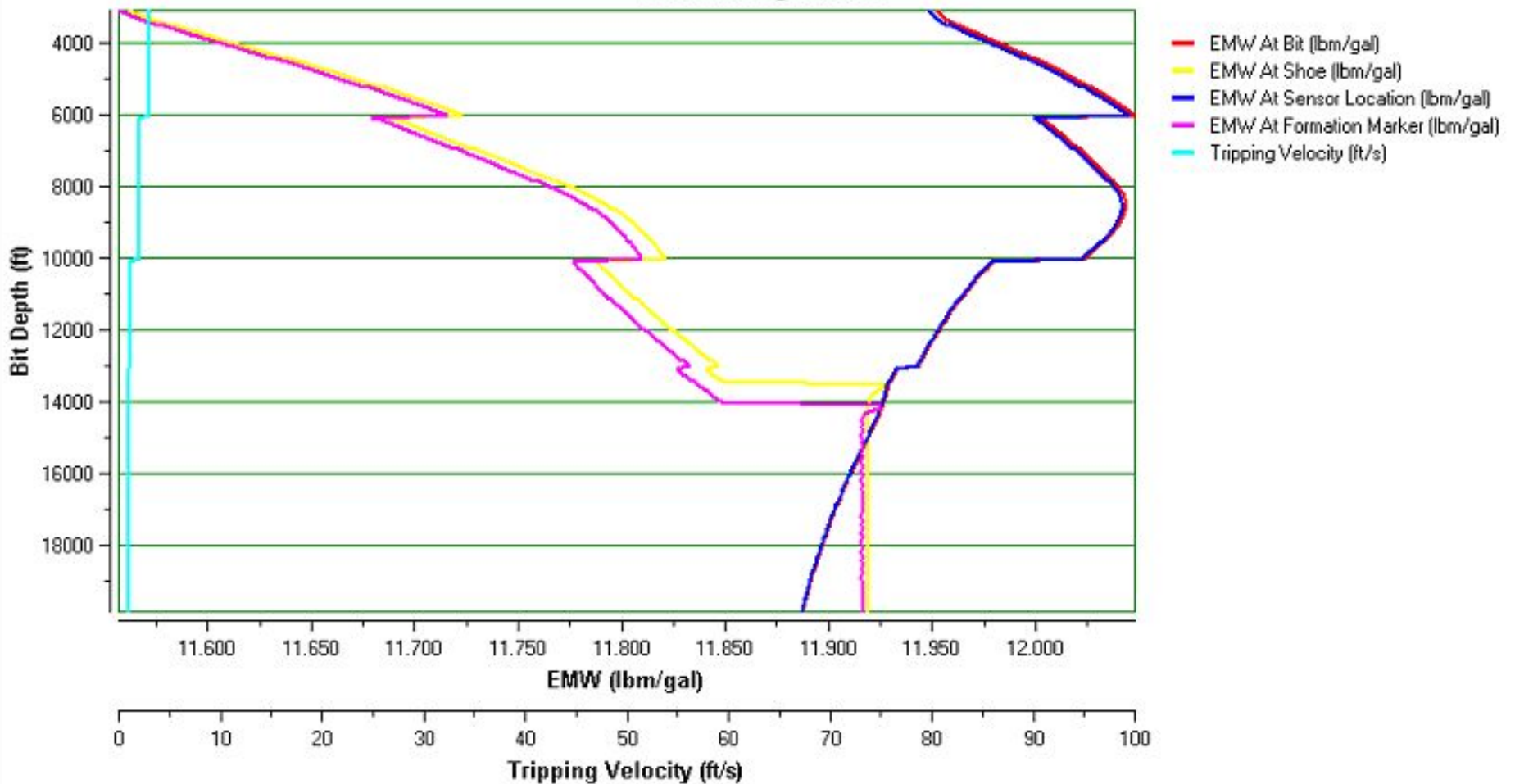
Parameters
Open-Ended Pipe Pumps On
Acceleration/Deceleration 0.6 ft/s²
Stand Length 90 ft
Connection Time 60 s
Gel Strength (10 s/10 min) 25 lbf/100ft²

	Bit Depth (ft)	RIH Speed (ft/s)
1	6000	3
2	10000	2
3	13000	1.2
4	20000	1
5		

Gauges
Sensor Location (From Bit) 40.25 ft
Formation Marker (MD) 14000 ft

РЕЗУЛЬТАТЫ РАСЧЕТА ДАВЛЕНИЙ ПРИ СПО

Swab/Surge
Mud Weight = 11.55
Well: W-13
Client: Schlumberger
Date: January 13, 2005



РЕЗУЛЬТАТЫ РАСЧЕТА ДАВЛЕНИЙ ПРИ СПО

Hydro - [Swab/Surge Report]							
File Edit View Window Launch Help							
English							
	A	B	C	D	E	F	G
74	SWAB/SURGE PARAMETERS						
75	<i>Tripping Schedule:</i>			User defined			
76	<i>Direction:</i>			RIH			
77				Open-Ended Pipe/Pumps On			
78	<i>Pump Flowrate (gal/min):</i>			400.0			
79	<i>Acceleration (ft/s²):</i>			0.6			
80	<i>Stand Length (ft):</i>			90.0			
81	<i>Connection Time (s):</i>			60.0			
82	<i>Sensor Location-From Bit (ft):</i>			40.25			
83	<i>Formation Marker-MD (ft):</i>			14000.0			
84	<i>Surge Margin (lbm/gal):</i>			1.0			
85	<i>Gel Strength (lbf/100ft²):</i>			25.0			
86							
87	SWAB/SURGE OUTPUT						
88			EMW At	EMW At	EMW At	EMW At	
	Bit Depth	Tripping Speed	Bit	Sensor	Shoe	Formation	Total Trip Ti
89	ft	ft/s	lbm/gal	lbm/gal	lbm/gal	lbm/gal	
90							
91	3209.9	3.0	11.95	11.95	11.57	11.61	
92	3299.9	3.0	11.96	11.95	11.57	11.62	
93	3389.9	3.0	11.96	11.95	11.57	11.62	
94	3479.9	3.0	11.96	11.96	11.58	11.63	
95	3569.9	3.0	11.96	11.96	11.58	11.63	
96	3659.9	3.0	11.97	11.96	11.59	11.64	
97	3749.9	3.0	11.97	11.97	11.60	11.64	
98	3839.9	3.0	11.97	11.97	11.60	11.65	
99	3929.9	3.0	11.98	11.97	11.61	11.65	
100	4019.9	3.0	11.98	11.98	11.61	11.66	
101	4109.9	3.0	11.99	11.98	11.62	11.66	
102	4199.9	3.0	11.99	11.99	11.62	11.67	

ВКЛЮЧЕНИЕ ОПЦИИ РАСЧЕТА С УЧЕТОМ ПОЛЯ ТЕМПЕРАТУР

Hydraulics Inputs - PTRheology

Bit Depth: 20000 ft

BHA: demo 3031.0 ft
Well Geom: demo 20000.0 ft
Survey: demo 20000.0 ft

Rheology Bit/Flow Rig Tools/Misc Motor Cuttings Swab/Surge **Temperature**

Settings
Model Bingham Use PV-YP **P-T On/Theoretical**

Properties

Oil/Water Ratio	0 %	Reference Pressure	14.7 psi
Mud Weight	11.55 lbm/gal	Reference Temperature	68 degF
Consistency Index (K)	542.2 eq. cP		
Flow Behavior Index (n)	0.659		
Plastic Viscosity	40 cP		
Yield Point	29 lbf/100ft ²	Fann 300	69 lbf/100ft ²
		Fann 600	109 lbf/100ft ²

ЗАДАНИЕ ТЕМПЕРАТУРНОГО ГРАДИЕНТА

Hydraulics Inputs - PTRheology

Bit Depth: 20000 ft

BHA: demo 3031.0 ft
Well Geom: demo 20000.0 ft
Survey: demo 20000.0 ft

Filter Run Plots Run Report

Rheology Bit/Flow Rig Tools/Misc Motor Cuttings Swab/Surge Temperature

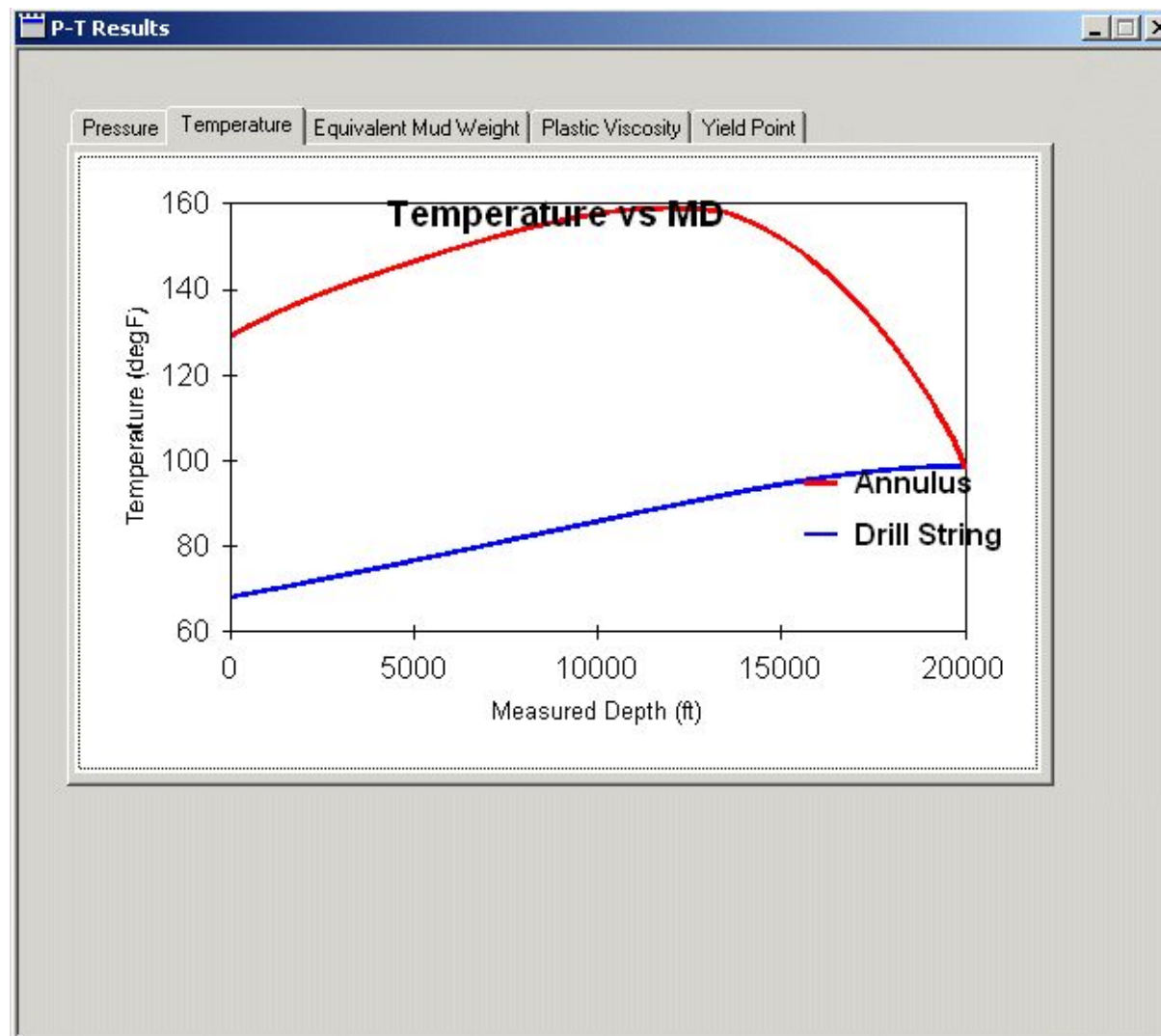
Input
 Simulator Manual/WEST

Circulation
Mud Temperature In 68 degF

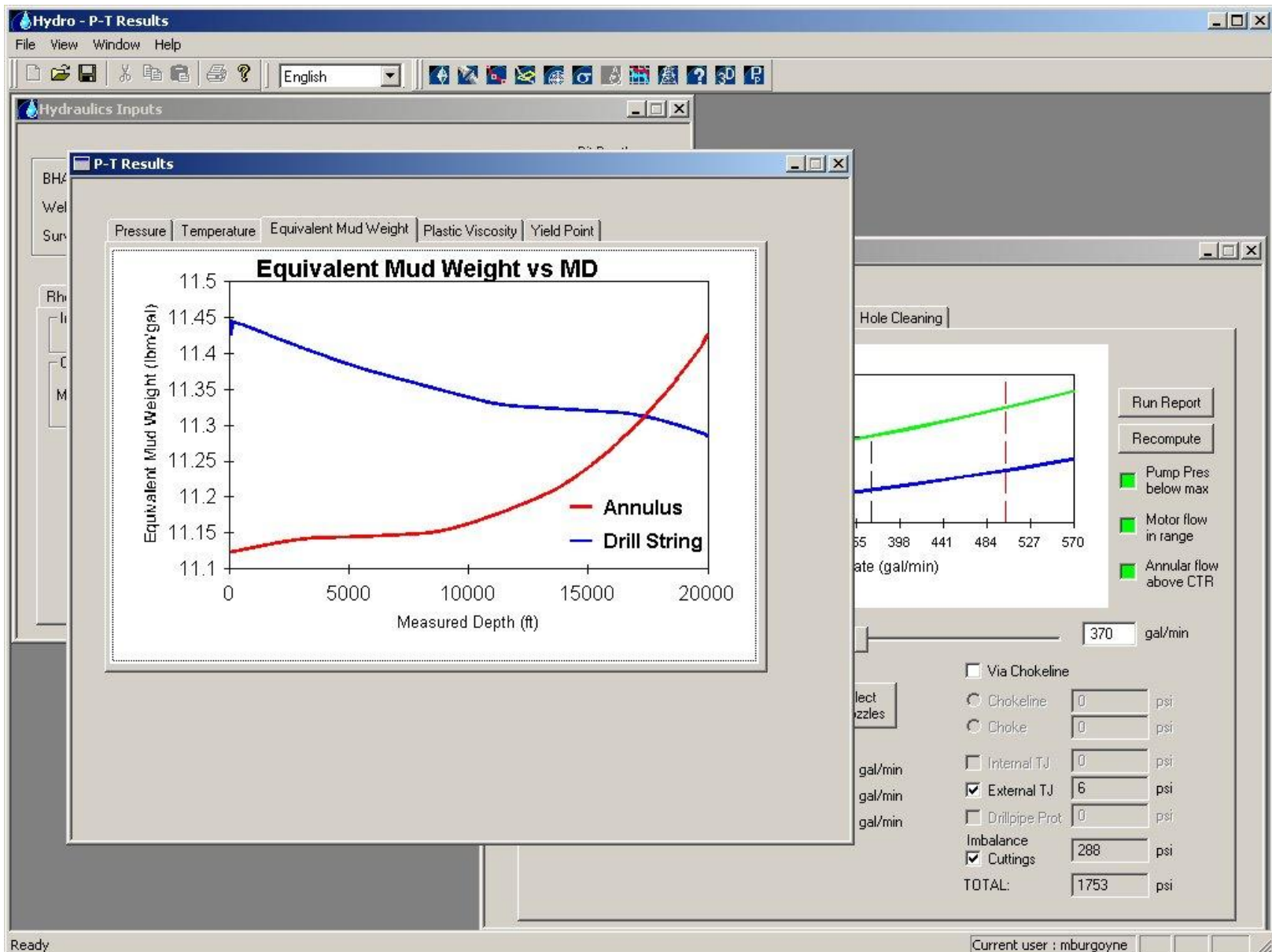
Undisturbed Temperature Profile

Water Depth 0 ft
Surface Ambient 68 degF
Sea Floor Temperature 35 degF
Thermocline Temperature 35 degF
Thermocline Depth 0 ft
Geothermal Gradient 1.8 degF/100ft

РЕЗУЛЬТАТЫ МОДЕЛИРОВАНИЯ ТЕМПЕРАТУРЫ РАСТВОРА ПРИ ЦИРКУЛЯЦИИ В СКВАЖИНЕ



РЕЗУЛЬТАТЫ РАСЧЕТА ЭКВИВАЛЕНТНОЙ ПЛОТНОСТИ



ВКЛЮЧЕНИЕ ОПЦИИ ПОЛУЭМПИРИЧЕСКОГО МОДЕЛИРОВАНИЯ РАСПРЕДЕЛЕНИЯ ТЕМПЕРАТУР И ДАВЛЕНИЙ

Hydraulics Inputs - SwabSurge

Bit Depth: 20000 ft

BHA: demo 3031.0 ft
Well Geom: demo 20000.0 ft
Survey: demo 20000.0 ft

Run Plots
Run Report

Rheology Bit/Flow Rig Tools/Misc Motor Cuttings Swab/Surge Temperature

Settings
Model Power Law Use PV-YP P-T On/Semi-Empirical

Fann Fit Type Exponential

Oil/Water Ratio 0 % Reference Pressure 14.7 psi
Mud Weight 11.55 lbm/gal Reference Temperature 68 degF

	Pressure (psi)	Temperature (degF)		Fann3 (lbf/100ft ²)	Fann6 (lbf/100ft ²)	Fann100 (lbf/100ft ²)	Fann200 (lbf/100ft ²)	Fann300 (lbf/100ft ²)	Fann600 (lbf/100ft ²)
1	2500	120	✓	3	3	27.2	48.9	69.8	127.9
2	2500	150	✓	2	3	20.5	33	46.1	85.8
3	2500	200	✓	2	3	12.3	20.5	28.2	55.2
4	2500	250	✓	1	2	8.2	15.3	19.2	37.8
5	2500	300	✓	1	1	6.1	10.2	15.5	30.9
6	5000	120	✓	3	4.1	33.9	55.2	78.6	143.7
7	5000	150	✓	2	3	21.4	37.8	53.4	98.7
8	5000	200	✓	2	3	13.3	22.4	31.1	58.9

ИСХОДНЫЙ ВИД ОКНА МОДУЛЯ DRILLSAFE

DrillSAFE - Analysis 1

File Edit View Output Options Window Launch Help

English

Analysis 1

BHA: ft

Well Geom: ft

Survey: ft

Run Report

Mud Weight Input

8.345 lbm/gal

Torque & Drag | BHA Tendency | Bit Side Forces | FF Calibration | Sag & BHA Mag

Torque & Drag (S)

Torque & Drag (M)

Drilling Parameters

Downhole WoB: 1000 lbf

Downhole ToB: 1000 ft.lbf

Block Weight: 1000 lbf

Operating Mode

Rotating Sliding Reaming

Input	Bottom Depth (ft)	Rotation Component	Translation Component	Friction Factor
1				
2				
3				
4				

Bit Depth

0 ft

ROP: ft/hr

RPM:

Compute Friction Factors

Yellow cells are mandatory. White cells are optional.

Ready

Current user : Kdixon2

NUM

СОЗДАНИЕ ТРАЕКТОРИИ СКВАЖИНЫ В МОДУЛЕ WELL DESIGN

Well Design - [Tutorial#1]

File Edit View Output Format Add Options Window Launch Help

Metric

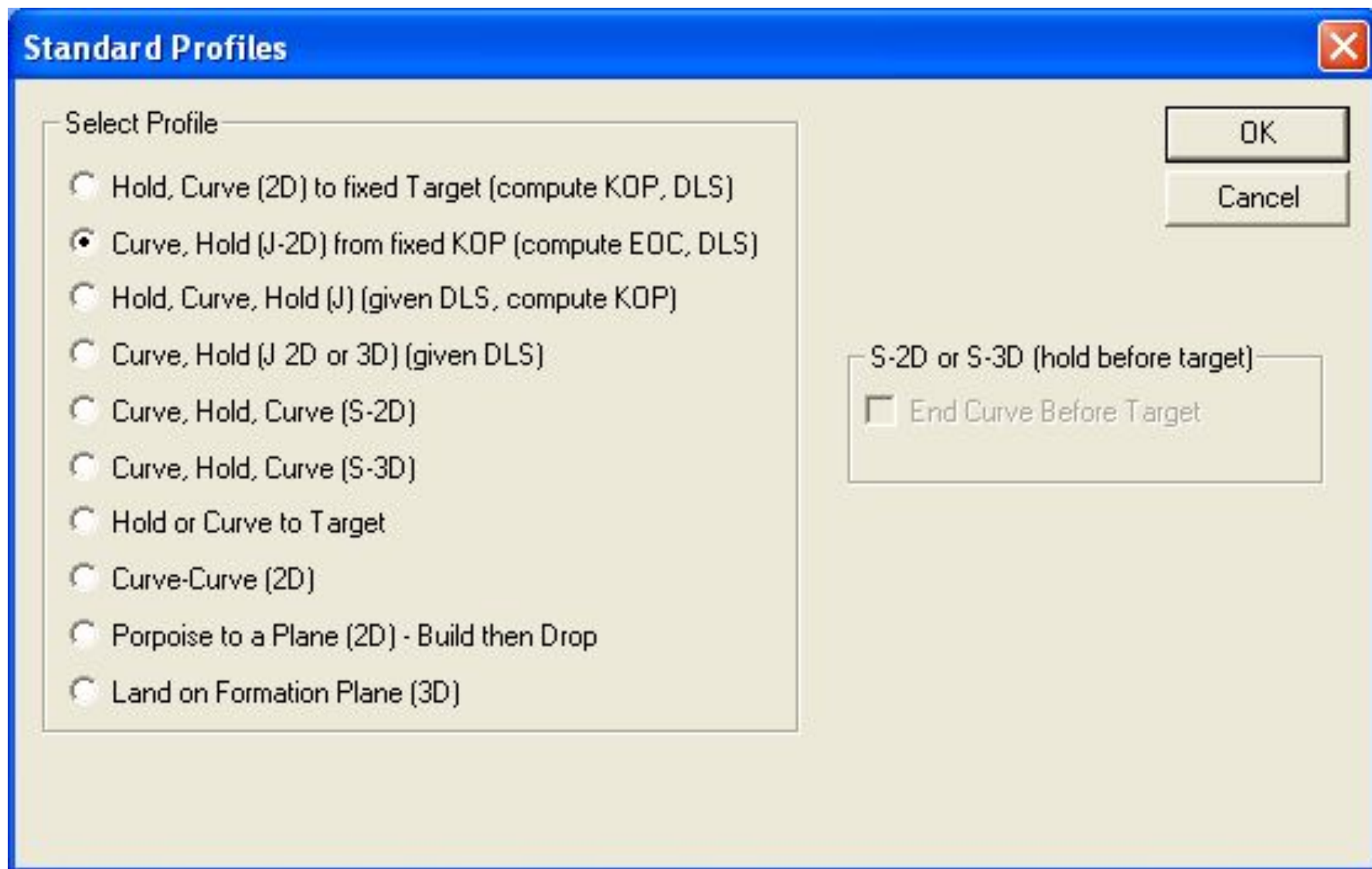
Horizontal Ref: Structure: Sosnovaya Elevation Ref: Borehole: Rotary Table

B1 0.00

	Comment	MD (m)	INCL (°)	Azim (°)	TVD (m)	VSEC (m)	NS (m)	EW (m)	DLS (°/30m)	TF (°)	BR (°/30m)	TR (°/30m)	?MD (m)
1	Tie-In	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.0			
2	KOP	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	200.00
3	End of Build	391.86	25.58	0.00	385.55	42.13	42.13	0.00	4.00	0.0	4.00	0.00	191.86
4	Casing Point 9 5/8"	795.92	25.58	0.00	750.00	216.60	216.60	0.00	0.00	0.0	0.00	0.00	404.06
5	Begin of Drop	1598.15	25.58	0.00	1473.59	563.00	563.00	0.00	0.00	180.0	0.00	0.00	1206.29
6	Target#1	3133.05	0.00	0.00	2958.00	900.00	900.00	0.00	0.50		-0.50	0.00	1534.91

Ready Current user : ADMIN VSEC Origin: (0.00 N, 0.00 E) VSEC Azim: 0.00

СТАНДАРТНЫЕ ТРАЕКТОРИИ ДОСТУПНЫЕ В МОДУЛЕ WELL DESIGN



ЗАДАНИЕ ПАРАМЕТРОВ ИСКРИВЛЕННОГО УЧАСТКА В МОДУЛЕ WELL DESIGN

End of Curve Conditions ✖

Constant DLS | Build Rate/Turn Rate | DLS - TF |

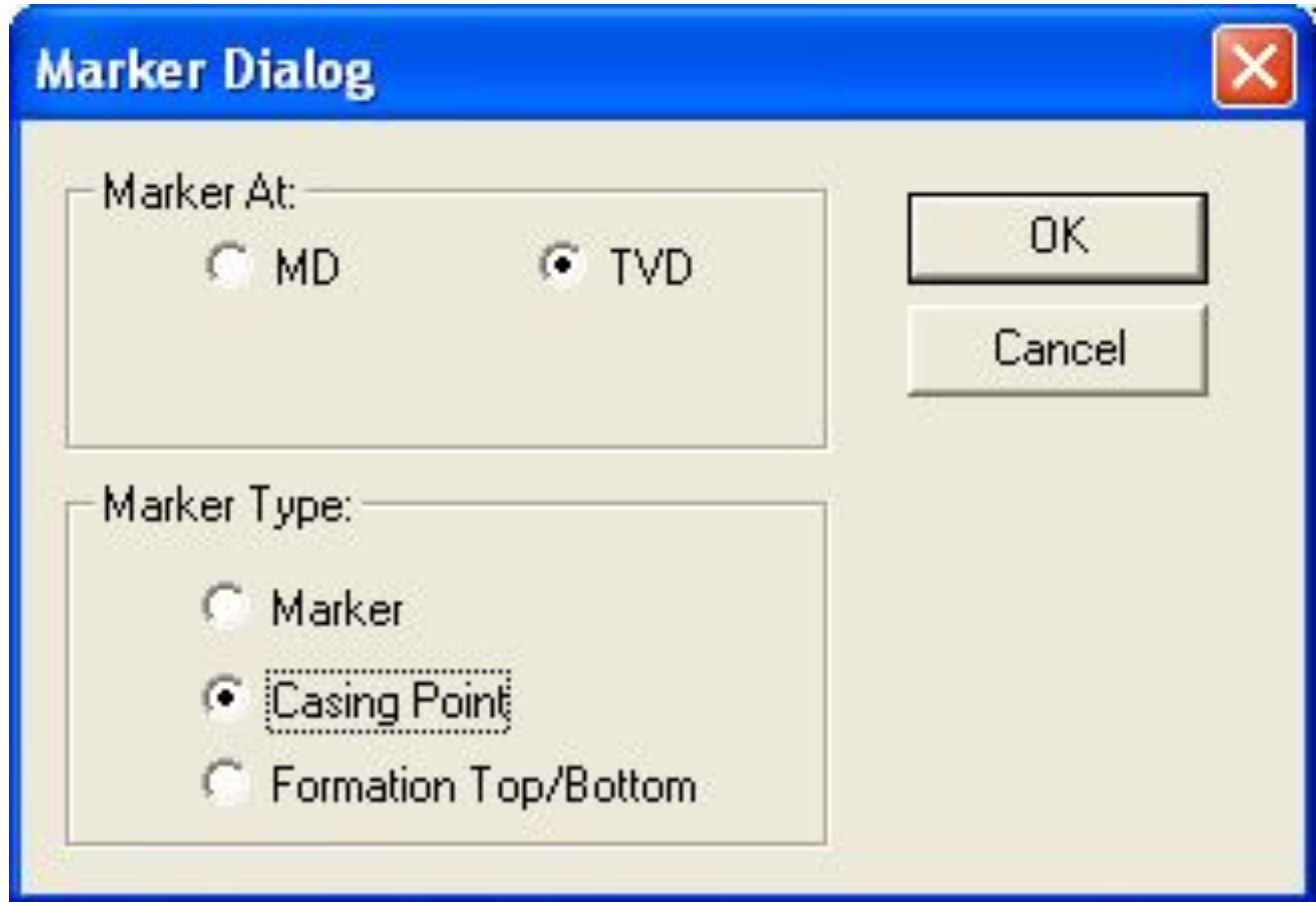
Maintain	To
<input checked="" type="checkbox"/> Build Rate	<input type="radio"/> MD
<input type="checkbox"/> Turn rate	<input type="radio"/> TVD
	<input type="radio"/> for a Course (Delta MD) <input type="text" value="0"/>
	<input checked="" type="radio"/> Inclination
	<input type="radio"/> Azimuth

Note:

1. Station will be computed using Radius of Curvature.
2. Build and Turn to a TVD is an iterative solution.

OK Отмена Применить Справка

ДОБАВЛЕНИЕ МАРКЕРОВ НА ТРАЕКТОРИЮ В МОДУЛЕ WELL DESIGN



The image shows a dialog box titled "Marker Dialog" with a blue title bar and a red close button in the top right corner. The dialog is divided into two main sections for configuration. The first section, labeled "Marker At:", contains two radio button options: "MD" and "TVD", with "TVD" being the selected option. The second section, labeled "Marker Type:", contains three radio button options: "Marker", "Casing Point", and "Formation Top/Bottom", with "Casing Point" being the selected option. To the right of these sections are two buttons: "OK" and "Cancel".

Marker Dialog

Marker At:

MD TVD

Marker Type:

Marker
 Casing Point
 Formation Top/Bottom

OK

Cancel

ДОБАВЛЕНИЕ МАРКЕРОВ НА ТРАЕКТОРИЮ В МОДУЛЕ WELL DESIGN

The screenshot displays the 'Well Design - [Tutorial#1]' software window. The interface includes a menu bar (File, Edit, View, Output, Format, Add, Options, Window, Launch, Help), a toolbar with various icons, and a status bar at the bottom. The main area shows a data table with columns for well parameters. The table is titled 'E4' and contains 6 rows of data. The 'TVD (m)' column for row 4 is highlighted with a yellow box. The status bar at the bottom indicates 'Ready', 'Current user : ADMIN', 'VSEC Origin: (0.00 N, 0.00 E)', and 'VSEC Azim: 0.00'.

	Comment	MD (m)	INCL (°)	Azim (°)	TVD (m)	VSEC (m)	NS (m)	EW (m)	DLS (°/30m)	TF (°)	BR (°/30m)	TR (°/30m)	?MD (m)
1	Tie-In	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.0			
2	KOP	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	200.00
3	End of Build	391.86	25.58	0.00	385.55	42.13	42.13	0.00	4.00	0.0	4.00	0.00	191.86
4	Casing Point		0.00	0.00		0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.00
5	End of Drop	1598.15	25.58	0.00	1473.59	563.00	563.00	0.00	0.00	180.0	0.00	0.00	1206.29
6	Target#1	3133.05	0.00	0.00	2958.00	900.00	900.00	0.00	0.50		-0.50	0.00	1534.91

ДОБАВЛЕНИЕ МАРКЕРОВ НА ТРАЕКТОРИЮ В МОДУЛЕ WELL DESIGN

The screenshot displays the 'Well Design - [Tutorial#1]' software window. The interface includes a menu bar (File, Edit, View, Output, Format, Add, Options, Window, Launch, Help), a toolbar with various icons, and a status bar at the bottom. The main area shows a well trajectory table with columns for MD (m), INCL (°), Azim (°), TVD (m), VSEC (m), NS (m), EW (m), DLS (°/30m), TF (°), BR (°/30m), TR (°/30m), and ?MD (m). The table contains 6 rows of data, with the 4th row highlighted in yellow. The status bar indicates 'Ready', 'Current user : ADMIN', 'VSEC Origin: (0.00 N, 0.00 E)', and 'VSEC Azim: 0.00'.

Horizontal Ref: Structure: Sosnovaya Elevation Ref: Borehole: Rotary Table

E4 750.00

	Comment	MD (m)	INCL (°)	Azim (°)	TVD (m)	VSEC (m)	NS (m)	EW (m)	DLS (°/30m)	TF (°)	BR (°/30m)	TR (°/30m)	?MD (m)
1	Tie-In	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.0			
2	KOP	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	200.00
3	End of Build	391.86	25.58	0.00	385.55	42.13	42.13	0.00	4.00	0.0	4.00	0.00	191.86
4	Casing Point 9 5/8"	795.92	25.58	0.00	750.00	216.60	216.60	0.00	0.00	0.0	0.00	0.00	404.06
5	End of Drop	1598.15	25.58	0.00	1473.59	563.00	563.00	0.00	0.00	180.0	0.00	0.00	1206.29
6	Target#1	3133.05	0.00	0.00	2958.00	900.00	900.00	0.00	0.50		-0.50	0.00	1534.91

Ready Current user : ADMIN VSEC Origin: (0.00 N, 0.00 E) VSEC Azim: 0.00

СОЗДАНИЕ ОТЧЕТА ПО ТРАЕКТОРИИ В МОДУЛЕ WELL DESIGN

Plot Manager [X]

Template Selection

Template:

Create Excel Plots

Plan View Interpolations | VSEC View Interpolations | Critical Points | Slots | Targets

	Bottom MD Depth(m)	MD Interp Interval (m)
1	2010	2
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

Enter the depth range and the interpolation interval for that range.

Don't Use

Hold Section Interpolations

- Curves Only
- Incl and Azim Constant
- Inclination Changes Azimuth Constant
- Azimuth Changes Inclination Constant

Use Last Interval To TD

СОЗДАНИЕ ОТЧЕТА ПО ТРАЕКТОРИИ В МОДУЛЕ WELL DESIGN

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ ДОЛОТА В МОДУЛЕ BHA EDITOR

The screenshot displays the BHA Editor software interface. The window title is "BHA Editor - [-No Name >]". The menu bar includes File, Edit, View, Output, Window, Launch, and Help. The toolbar contains various icons for file operations and editing. The left pane shows a catalog of bits with the following list:

- 6 3/8" Max OD
- 6 1/2" Max OD
- 6 3/4" Max OD
- 7 1/2" Max OD
- 7 5/8" Max OD
- 7 7/8" Max OD
- 8 1/8" Max OD
- 8 1/4" Max OD
- 8 3/8" Max OD
- 8 1/2" Max OD
- 5 3/4" Body OD
- 6" Body OD
- 8 3/4" Max OD
- 9 1/4" Max OD
- 9 3/8" Max OD
- 9 1/2" Max OD
- 9 5/8" Max OD
- 9 7/8" Max OD
- 10 1/2" Max OD
- 10 5/8" Max OD
- 11" Max OD
- 11 1/2" Max OD
- 11 5/8" Max OD
- 11 3/4" Max OD
- 12" Max OD
- 12 1/4" Max OD
- 12 19/32" Max OD
- 13 1/2" Max OD
- 13 3/4" Max OD

The middle pane shows a 3D model of the bit with the following labels:

- <No Name>
- BHA
- 8 1/2" Bit

The right pane shows the configuration parameters for the bit:

General | More | Bit

Type: Milled Tooth Bit Non-Magnetic

Name: 8 1/2" Bit

Manufacturer: Generic

Model: SN#

Dimensions:

Inner Diameter	2.25 in	Length	0.3048 m
Bit Shank OD	6 in	Bit Diameter	8.5 in

Weight:

Linear: 0 kg/m Total: 0 kg

Total Weight Below Item: 0 kg

Total Length Below Item: 0 m

Connection:

	Size	Connection Type
Top	4.5 in	Regular

Catalog -> Bit -> 8 1/2" Max OD -> 6" Body OD

Current user : ADMIN NUM

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ ДОЛОТА В МОДУЛЕ BHA EDITOR

BHA Editor - [<No Name>]

File Edit View Output Window Launch Help

Metric

6 3/8" Max OD
6 1/2" Max OD
6 3/4" Max OD
7 1/2" Max OD
7 5/8" Max OD
7 7/8" Max OD
8 1/8" Max OD
8 1/4" Max OD
8 3/8" Max OD
8 1/2" Max OD
5 3/4" Body OD
6" Body OD
8 3/4" Max OD
9 1/4" Max OD
9 3/8" Max OD
9 1/2" Max OD
9 5/8" Max OD
9 7/8" Max OD
10 1/2" Max OD
10 5/8" Max OD
11" Max OD
11 1/2" Max OD

<No Name>
BHA
8 1/2" Bit

General | More | Bit

Nozzles

Count	Size (1/32")
3	14

Gauge Length: 5.8 cm
TFA: 290.961 mm²

IADC Code

Hardness	Type	Feature
2 - Medium Formati	3 - Medium in its gr	1 - Standard, non-s

Grading Type

IADC
 Percentage

IADC Dull Bit Grading

Inner	Outer	Dull	Location
0 - N	0 - N	NO - N	A - All

Wear

Percentage: -1

Bearing Seals: 0 - N
Gauge: I - in
Other Dull: NO - N
Reason Pulled: BHA - C

For Help, press F1

Current user : ADMIN NUM

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ ОТКЛОНИТЕЛЯ В МОДУЛЕ BHA EDITOR

The screenshot displays the BHA Editor software interface. The window title is "BHA Editor - [<No Name>]". The menu bar includes File, Edit, View, Output, Window, Launch, and Help. The toolbar contains various icons for file operations and editing. The main interface is divided into three sections:

- Left Panel (Component List):** A tree view showing a list of components. The selected component is "A675M4570XP".
- Center Panel (3D Model):** A 3D model of the BHA assembly. The selected component is highlighted in yellow. The model shows a "BHA" assembly with an "A675M4570XP" component and an "8 1/2" Bit".
- Right Panel (Parameter Configuration):** A detailed configuration panel for the selected component. It includes tabs for "General", "More", and "Motor".

Parameter Configuration Details:

- General:**
 - Type: PDM (dropdown)
 - Name: A675M4570XP
 - Manufacturer: Schlumberger (dropdown)
 - Model: A675M4570XP
 - SN#: (text field)
- Dimensions:**
 - Inner Diameter: 5.5 in
 - Length: 8.08025 m
 - Outer Diameter: 6.75 in
 - Maximum OD: 8.375 in
 - Fish-Neck OD: 0 in
 - Fish-Neck Length: 0 m
- Weight:**
 - Linear: 121.821 kg/m
 - Total: 984.329 kg
 - Total Weight Below Item: 24.9996 kg
 - Total Length Below Item: 0.3048 m
- Connection:**

	Size	Connection Type	BSR
Top	4.5 in	NC50 (4 1/2 IF)	Pin: N.A., Box: N.A.
Bottom	4.5 in	Regular	Pin: N.A., Box: N.A.

At the bottom of the window, the breadcrumb path is: Catalog -> Motor -> Schlumberger -> 6 3/4" OD -> A675M4570XP -> 4 1/2" NC50 (4 1/2 IF) (Up) -> 4 1/2" Regular (Down). The current user is ADMIN.

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ ОТКЛОНИТЕЛЯ В МОДУЛЕ BHA EDITOR

The screenshot displays the BHA Editor software interface for editing the parameters of a motor in a wellbore assembly. The window title is "BHA Editor - bha_3133". The interface is divided into three main sections:

- Equipment Database (Left):** A tree view showing various wellbore components such as Bent Sub, Bit, Collar, Downhole Sensor, Drill Pipe, Heavy Weight Drill Pipe, Hole Opener & Reamer, Jar/Shock Sub, Misc. Sub, Motor, MWD/LWD, Rotary Steerable, Stabilizer, Well Bore, and User.
- Assembly Diagram (Center):** A vertical schematic of the wellbore assembly. From top to bottom, the components are: bha_3133, 5" 19.50 DPE, 10% Wear, BHA, Crossover, 5" HWDP, Monel 6 3/4" Collar, PowerPulse, CDR, Stabilizer, A675M4570XP, Stabilizer #1, and 8 1/2" Bit.
- Parameter Settings (Right):** A panel with tabs for "General", "More", and "Motor". The "Motor" tab is active, showing the following parameters:
 - Bend #1:** Angle is 0.5 deg; Bend to Bottom Connection is 1.83794 m.
 - Bend #2:** Angle is 0 deg; Bend to Bottom Connection is 0 m.
 - Tool Read-out Port Distance:** Read-out Port To Bottom Connection is 0 m.
 - Flow Range:** 1135.6 to 2271.25 L/min.

At the bottom of the window, the status bar indicates "For Help, press F1" and "Current user : ADMIN CAP NUM".

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ ОТКЛОНИТЕЛЯ В МОДУЛЕ BHA EDITOR

The screenshot displays the BHA Editor software interface for editing the parameters of a stabilizer. The window title is "BHA Editor - bha_3133". The interface is divided into several sections:

- Equipment Database:** A tree view on the left showing a hierarchy of equipment types: Catalog, Bent Sub, Bit, Collar, Downhole Sensor, Drill Pipe, Heavy Weight Drill Pipe, Hole Opener & Reamer, Jar/Shock Sub, Misc. Sub, Motor, MWD/LWD, Rotary Steerable, Stabilizer, Well Bore, and User.
- Assembly Diagram:** A central diagram showing the components of the BHA (Bottom Hole Assembly) for "bha_3133". The components listed from top to bottom are: 5" 19.50 DPE, 10% Wear; BHA; Crossover; 5" HWDP; Monel 6 3/4" Collar; PowerPulse; CDR; Stabilizer; A675M4570XP; and 8 1/2" Bit. A blue box labeled "Stabilizer #1" is highlighted around the stabilizer component.
- General Properties Panel:** A panel on the right showing the configuration for the selected "Stabilizer #1".
 - Type:** Stabilizer
 - Name:** Stabilizer #1
 - Blade Distances:** Blade Mid-Point To PDM's Bottom Conn. is 0.5334 m.
 - Blade Mid-Point to the Bit:** 0.8382 m.
 - Dimensions:** Body Length is 0.356616 m; Max. Outer Diameter is 8.375 in.
 - Blade Info:** Blade Length is 0.356616 m; Blade Width is 0 in; Blade Spiral is 0.000000 deg.
 - Remark:** A text area for additional notes.

At the bottom of the window, the status bar shows "For Help, press F1" and "Current user : ADMIN CAP NUM".

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ БУРИЛЬНЫХ ТРУБ В МОДУЛЕ BHA EDITOR

BHA Editor - [<No Name>]

File Edit View Output Window Launch Help

Metric

Equipment Database

- Catalog
 - Bent Sub
 - Bit
 - Collar
 - Downhole Sensor
 - Drill Pipe
 - 2 3/8" OD
 - 2 7/8" OD
 - 3 1/2" OD
 - 4" OD
 - 4 1/2" OD
 - 5" OD
 - 19.5 lbm/ft
 - E-75
 - FH
 - HT50
 - NC50 (4 1/2 IF)
 - 10% Wear
 - Class 2
 - New
 - Premium
 - G-105
 - S-135
 - X-95
 - 25.6 lbm/ft
 - 5 1/2" OD
 - 5 7/8" OD
 - 6 5/8" OD

<No Name>

- 5" 19.50 DPE, 10% Wear
- BHA
 - Crossover
 - 5" HWDP
 - Monel 6 3/4" Collar
 - PowerPulse
 - CDR
 - Stabilizer
 - A675M4570XP
- 8 1/2" Bit

General | More | Drill Pipe

Type: Drill Pipe Non-Magnetic

Name: 5" 19.50 DPE, 10% Wear

Manufacturer: [Dropdown]

Model: [Dropdown] SN#: [Text]

Dimensions

Inner Diameter	4.276 in	Length	3050 m
Outer Diameter	4.928 in	Maximum OD	6.625 in
Tool Joint ID	3.75 in	Tool Joint OD	6.625 in

Weight

Linear	31.0877 kg/m	Total	94816 kg
Total Weight Below Item	8474.87 kg		
Total Length Below Item	84.7716 m		

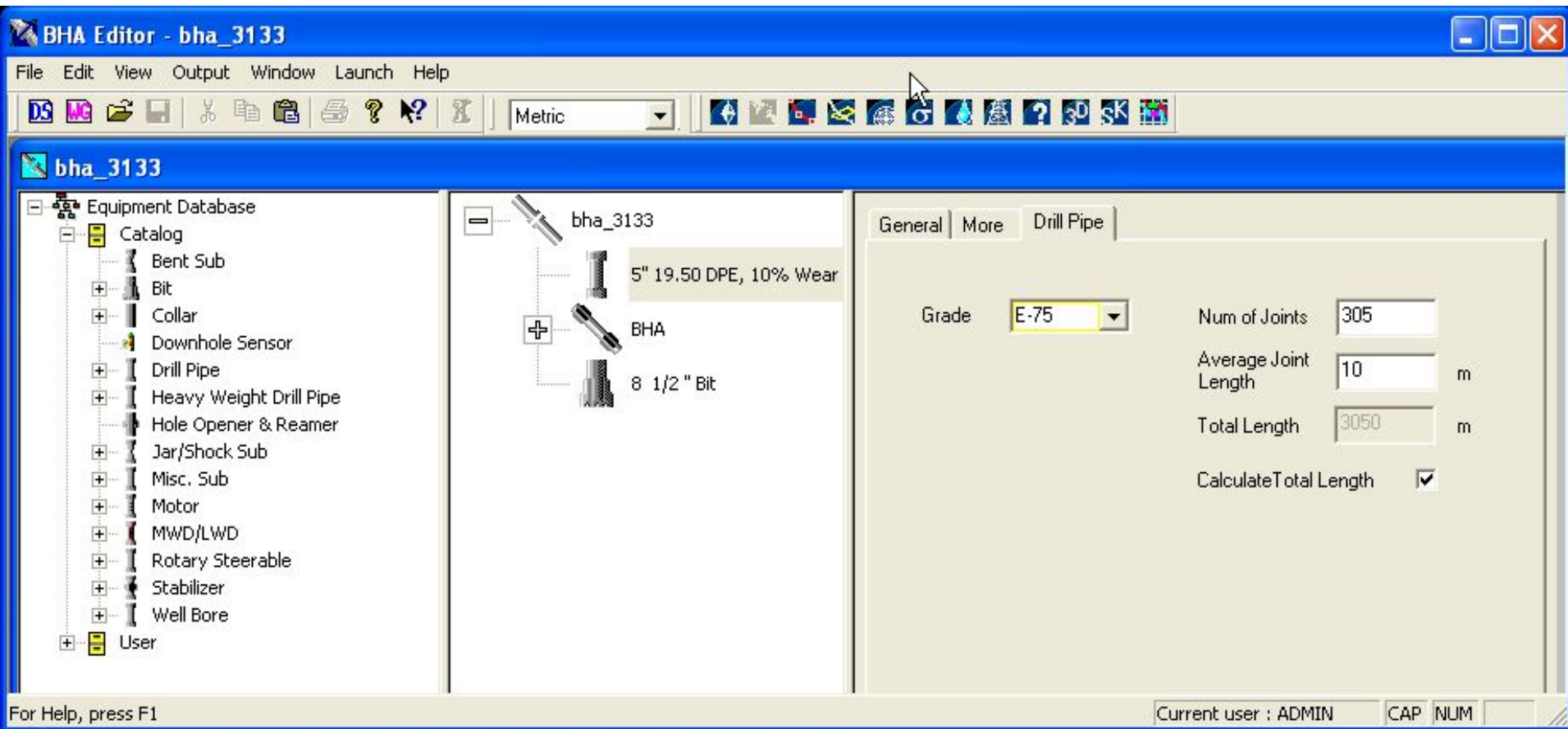
Connection

	Size	Connection Type	
Top	5 in	NC50 (4 1/2 IF)	<input type="radio"/> Pin
			<input checked="" type="radio"/> Box
Bottom	5 in	NC50 (4 1/2 IF)	<input type="radio"/> Pin
			<input checked="" type="radio"/> Box

For Help, press F1

Current user : ADMIN NUM

РЕДАКТИРОВАНИЕ ПАРАМЕТРОВ БУРИЛЬНЫХ ТРУБ В МОДУЛЕ BHA EDITOR



КОМПОНОВКА БК, СОЗДАННАЯ В МОДУЛЕ ВНА EDITOR

The screenshot displays the BHA Editor software interface for a wellbore assembly named 'bha_3133'. The interface is divided into three main sections:

- Equipment Database (Left Panel):** A hierarchical tree view showing various equipment categories and their specifications. The 'Drill Pipe' section is expanded, listing different outer diameters (OD) and weights (lbm/ft).
 - Equipment Database
 - Catalog
 - Bent Sub
 - Bit
 - Collar
 - Downhole Sensor
 - Drill Pipe
 - 2 3/8" OD
 - 2 7/8" OD
 - 3 1/2" OD
 - 4" OD
 - 4 1/2" OD
 - 5" OD
 - 19.5 lbm/ft
 - E-75
 - FH
 - HT50
 - NC50 (4 1/2 IF)
 - 10% Wear
 - Class 2
 - New
 - Premium
 - G-105
 - S-135
 - X-95
 - 25.6 lbm/ft
 - 5 1/2" OD
 - 5 7/8" OD
 - 6 5/8" OD

- Main Assembly View (Center Panel):** A vertical diagram of the wellbore assembly components, each with a corresponding icon and label.
- bha_3133
 - 5" 19.50 DPE, 10% Wear
 - BHA
 - Crossover
 - 5" HWDP
 - Monel 6 3/4" Collar
 - PowerPulse
 - CDR
 - Stabilizer
 - A675M4570XP
 - 8 1/2" Bit
- General Properties (Right Panel):** A form for entering key assembly parameters.
- General
 - Name: bha_3133
 - Total Length: 3134.77 m
 - Total Weight: 103291 kg
 - Remark: (Empty text area)

At the bottom of the window, the status bar shows 'Current user : ADMIN' and 'NUM'.

СХЕМА КОМПОНОВКИ БК, СОЗДАННАЯ В МОДУЛЕ ВНА EDITOR

	Cum. Len. (m)
5" 19.50 DPE, 10% Wear (305)	3134.77
Crossover	84.77
5" HWDP (5 joints)	83.77
Monel 6 3/4" Collar	33.77
PowerPulse	23.77
CDR	16.24
Stabilizer	9.39
A675M4570XP (0.5 deg)	8.39
8 1/2 " Bit	0.30

BNGS
1024
Sosnovaya
Malobalykscoe
B-1
bha_3133

BHA DESCRIPTION				
ELEMENT	LENGTH (m)	OD (in)	ID (in)	MAX OD (in)
8 1/2 " Bit	0.30	8.50	2.25	8.50
A675M4570XP (0.5 deg)	8.08	6.75	5.50	8.38
Stabilizer	1.00	6.75	3.00	8.25
CDR	6.86	6.75	4.87	6.75
PowerPulse	7.53	6.75	5.11	6.89
Monel 6 3/4" Collar	10.00	6.75	3.00	6.75
5" HWDP (5 joints)	50.00	5.00	3.00	6.50
Crossover	1.00	6.75	2.25	6.75
5" 19.50 DPE, 10% Wear (305)	3050.00	4.93	4.28	6.63

Bit to Gamma Ray Sensor = 14.4904 m
 Bit to Resistivity Sensor = 11.1376 m
 Bit to Direction & Inclination Sensor = 19.8468 m

DRILLING OVERVIEW			
Depth in:	1598.00 m	Depth out:	3133.00 m
Inclination in:		To:	
Direction in:		To:	
Total Drilled	1535.00 m	Dogleg:	

ВВОД ДАННЫХ ПО ОБСАДНОЙ КОЛОННЕ В МОДУЛЕ ВНА EDITOR

The screenshot displays the BHA Editor software interface for wellbore geometry. The main window is titled "BHA Editor - [Wellbore Geometry]". The interface is divided into several sections:

- Top Menu:** File, Edit, View, Output, Window, Launch, Help.
- Toolbar:** Includes icons for file operations (DS, MG, Save, Copy, Paste, Print, Help), a "Metric" dropdown, and various tool icons.
- Hole Section / Error List / Inside Diameter Profile:** Contains a table with columns "From (m)", "To (m)", and "ID (in)". The "To" and "ID" columns for the second and third rows are highlighted in yellow.
- Equipment Database:** A tree view showing the hierarchy: Equipment Database > Catalog > Well Bore > Casing. A list of casing diameters is shown: 1 3/64", 1 5/16", 1 21/32", 1 29/32", 2 1/16", 2 3/8", 2 7/8", 3 1/2", 4", and 4 1/2".
- Wellbore Geometry:** A tree view showing the selected wellbore: Wellbore Geometry > 9 5/8" Casing String > 9 5/8" Casing.
- Casing String Properties:** A detailed form for the selected casing string. It includes fields for Name, Type, MD Range (Top, Bottom), Total Length, Weight, and Diameters (Min Drift, Max OD). The "Length" and "Bottom" fields are highlighted in yellow.
- 9 5/8" Casing String Properties:** A detailed form for the selected casing string. It includes fields for Name, Type, Fix (Top, Length, Bottom), Adjust (Above, Below), OD, ID, Drift, Weight (Linear, Total), Grade, Connection Type, Num Jts, and Avg Jt Length. The "Length" and "Bottom" fields are highlighted in yellow.

At the bottom of the window, the status bar shows "Wellbore Geometry -> 9 5/8" Casing String -> 9 5/8" Casing" and "Current user : ADMIN NUM".

From (m)	To (m)	ID (in)
0.0	0.0	Air Gap
0.0	795.9	11.626
795.9	3133.1	8.500
3133.1		

Casing String Properties:

Name: 9 5/8" Casing String Type: Conductor Casing

MD Range: Top: 0 m Bottom: 795.92 m

Total Length: 795.92 m Weight: 47378.4 kg

Diameters: Min Drift: 8.75 in Max OD: 10.625 in

9 5/8" Casing String Properties:

Name: 9 5/8" Casing Type: Casing

Fix: Top: 0 m Length: 795.92 m Bottom: 795.92 m

Adjust: Adjust Above, Shift Above, Adjust Below, Shift Below

OD: 9.625 in Max OD: 10.625 in

ID: 8.835 in Drift: 8.75 in

Weight: Linear: 59.5266 kg/m Total: 47378.4 kg

Grade: C-75 Connection Type: BTC

Num Jts: 61 Avg Jt Length: 13 m

ОКНО МОДУЛЯ DRILLSAFE ПОСЛЕ ВВОДА ДАННЫХ ПО СКВАЖИНЕ

DrillSAFE - Analysis 1

File Edit View Output Options Window Launch Help

English

Analysis 1

BHA: BHA (Horizontal) 2442.91 ft

Well Geom: Well Geometry #1 14089 ft

Survey: Tutorial #1 14089.3 ft

Mud Weight Input: 8.345 lbm/gal

Torque & Drag | BHA Tendency | Bit Side Forces | FF Calibration | Sag & BHA Mag

Torque & Drag (S)
 Torque & Drag (M)

Drilling Parameters:

Downhole WoB: 0 1000 lbf
 Downhole ToB: 0 1000 ft.lbf
 Block Weight: 0 1000 lbf

Operating Mode:
 Rotating Sliding Reaming

Input	Bottom Depth (ft)	Rotation Component	Translation Component	Friction Factor
1	10500.0	0.20	0.00	
2	14089.0	0.30	0.00	
3				
4				

Bit Depth: 14089 ft

Yellow cells are mandatory. White cells are optional.

RDP: 0 ft/hr
 RPM: 0

Compute Friction Factors

Zeus -> A. Structure -> Slot #13 -> W-13 -> B-13 -> Plan -> Tutorial #1

Current user : Kdixon2 NUM

ВВОД ДАННЫХ В МОДУЛЬ DRILLSAFE ПРИ РАБОТЕ В РЕЖИМЕ SINGLE POINT

Drillsafe - Drillsafe Inputs

File Edit View Output Options Window Launch Help

English

Drillsafe Inputs

BHA: BHA (Horizontal) 2442.91 ft

Well Geom: Well Geometry #1 14089 ft Filter

Survey: Tutorial #1 14089.3 ft Tortuosity

Run Report

Mud Weight Input

10 lbm/gal

Torque & Drag | BHA Tendency | Bit Side Forces | FF Calibration | Sag & BHA Mag

Torque & Drag (S)
 Torque & Drag (M)

Drilling Parameters

Downhole WoB: 0 1000 lbf

Downhole ToB: 2 1000 ft.lbf

Block Weight: 70 1000 lbf

Operating Mode

Rotating Sliding Reaming

Input	Bottom Depth (ft)	Rotation Component	Translation Component	Friction Factor
1	10500.0	0.20	0.00	
2	14089.0	0.30	0.00	
3				
4				

Bit Depth

14089 ft

Yellow cells are mandatory. White cells are optional.

ROP: 0 ft/hr

RPM: 0

Compute Friction Factors

Ready

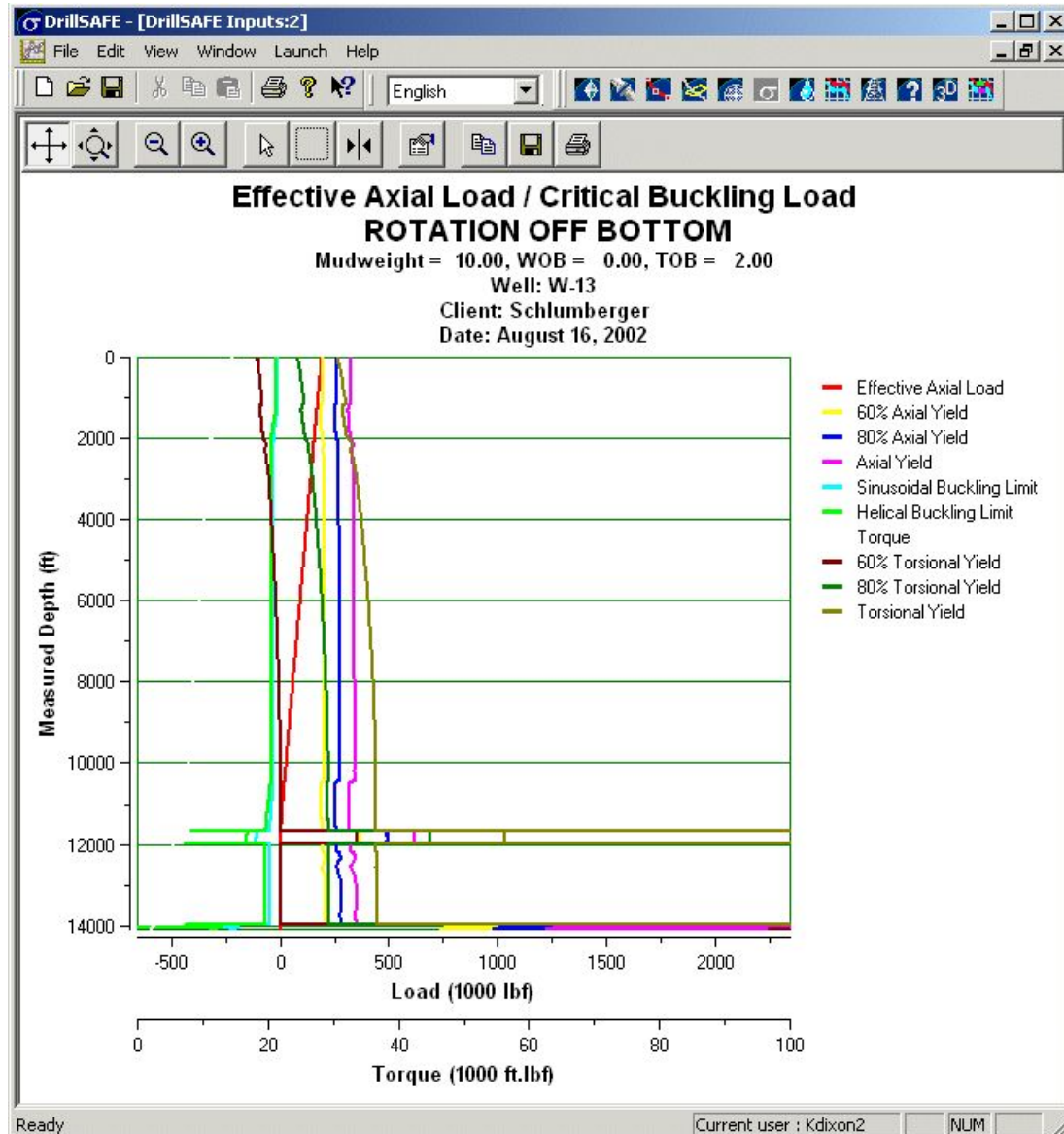
Current user : kdixon2

РЕЗУЛЬТАТЫ РАСЧЕТОВ МОДУЛЕМ DRILLSAFE ПРИ РАБОТЕ В РЕЖИМЕ SINGLE POINT

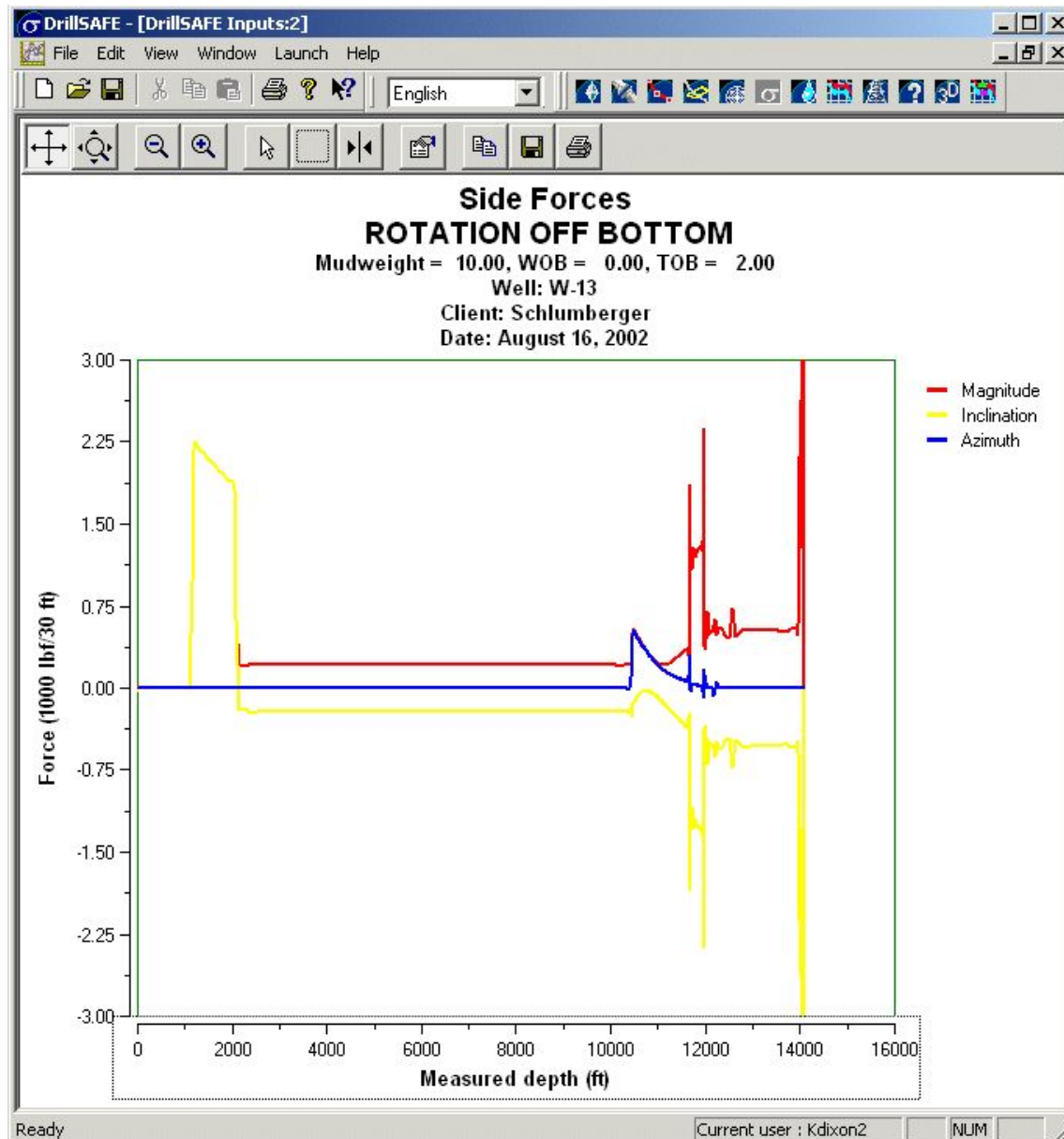
Running Single Point Torque and Drag Analysis...Done

Surface Torque = 14.5 1000 ft.lbf Hook Load = 262.8 1000 lbf

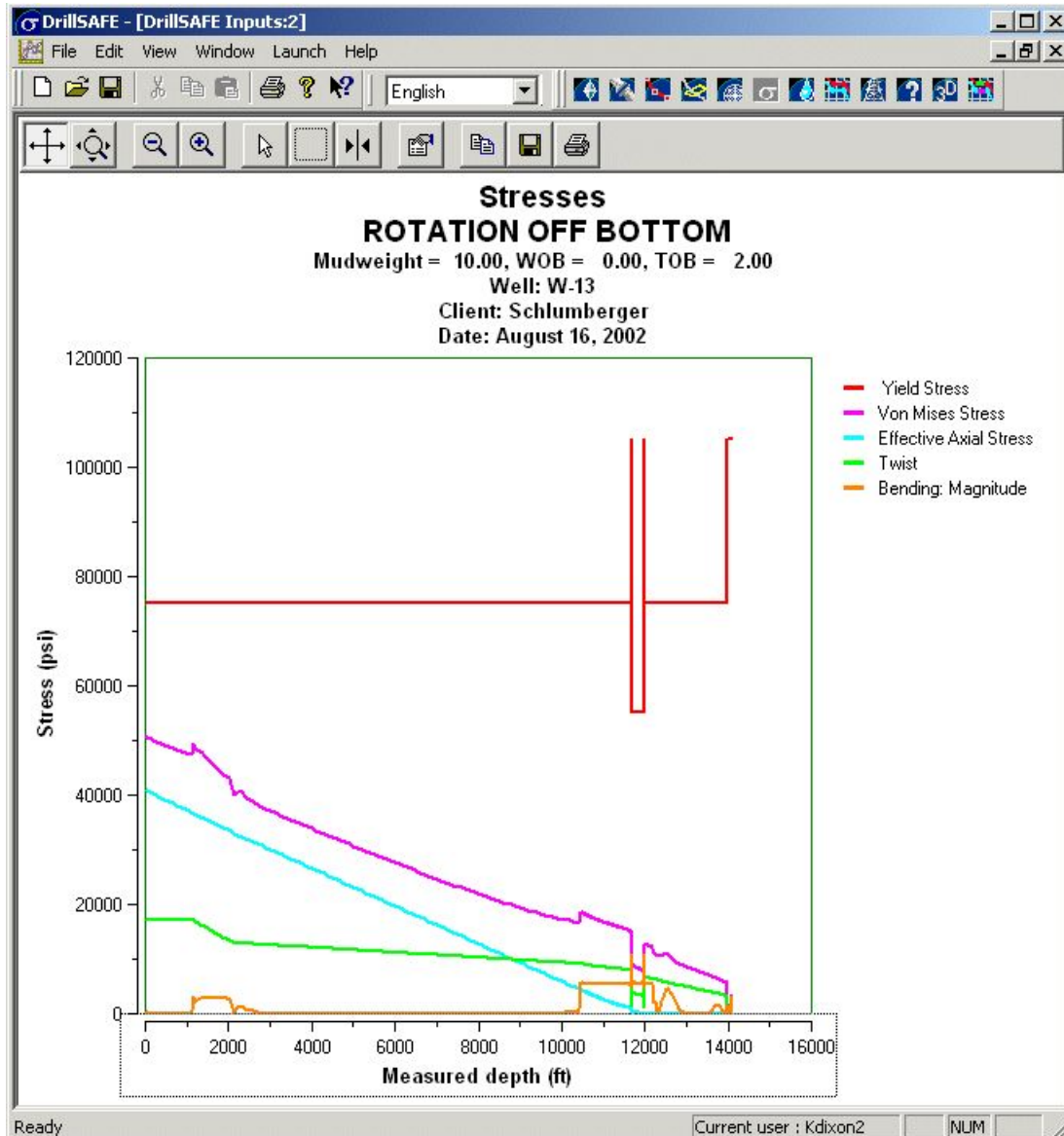
РЕЗУЛЬТАТЫ АНАЛИЗА ОСЕВЫХ УСИЛИЙ ПРИ ВРАЩЕНИИ НАД ЗАБОЕМ



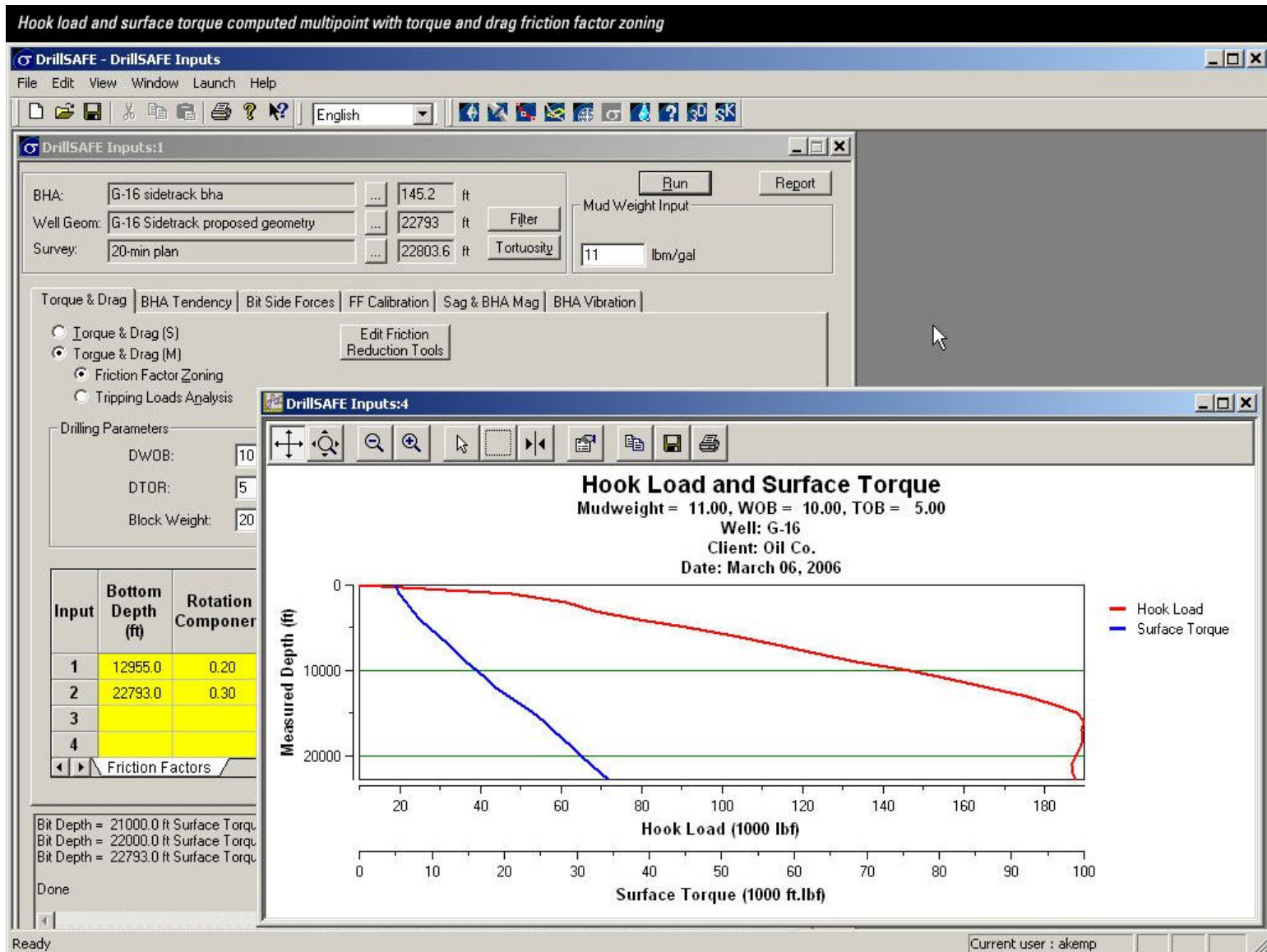
РЕЗУЛЬТАТЫ АНАЛИЗА ПРИЖИМАЮЩИХ УСИЛИЙ ПРИ ВРАЩЕНИИ НАД ЗАБОЕМ



РЕЗУЛЬТАТЫ АНАЛИЗА НАПРЯЖЕНИЙ ПРИ ВРАЩЕНИИ НАД ЗАБОЕМ



РЕЗУЛЬТАТЫ РАСЧЕТА НАГРУЗКИ НА КРЮКЕ И МОМЕНТА НА РОТОРЕ



РЕЗУЛЬТАТЫ РАСЧЕТА НАГРУЗКИ НА КРЮКЕ ПРИ ПОДЪЕМЕ

Tripping in hook loads analysis for deviated well for spread of torque and drag friction factors.



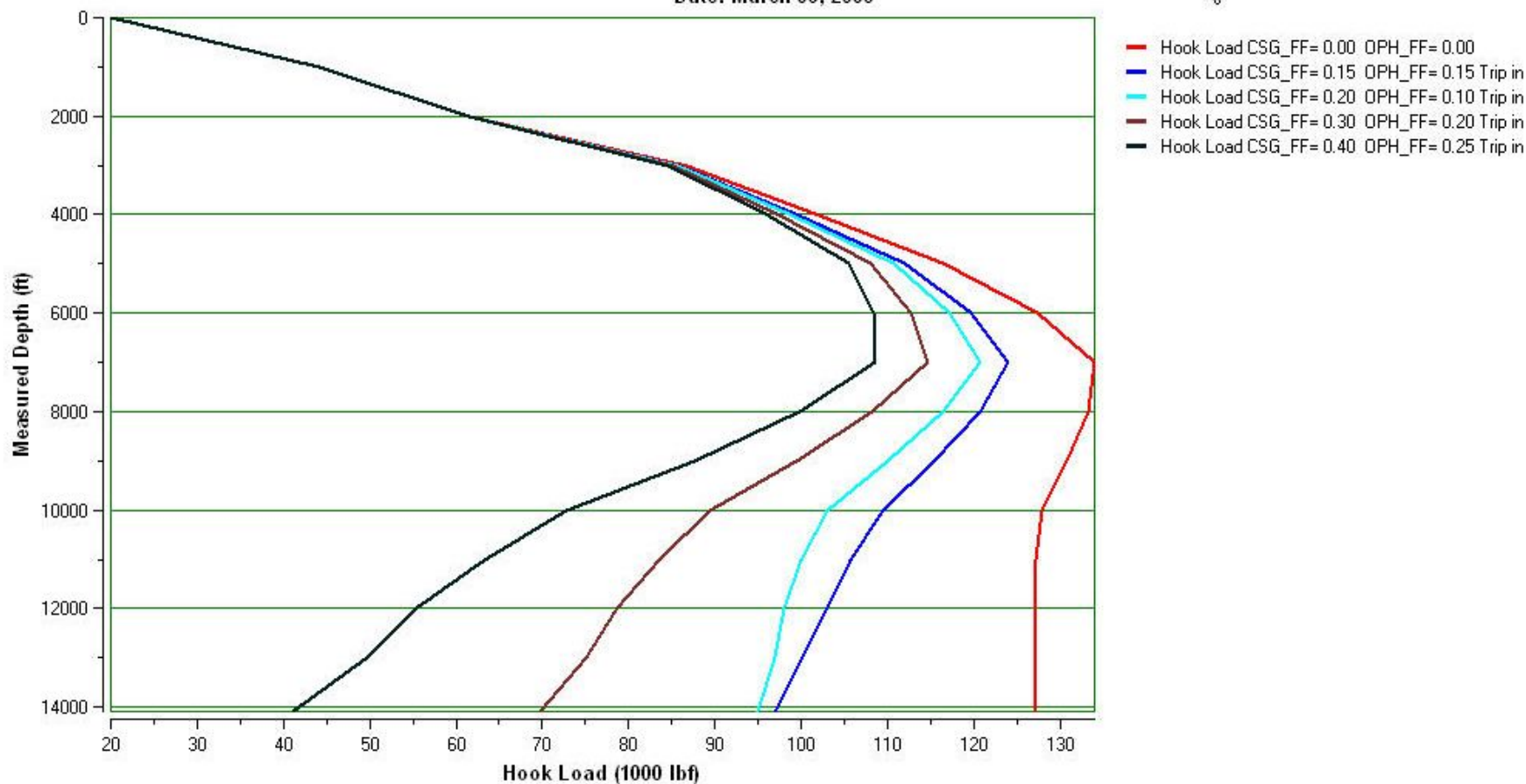
TRIPPING LOADS ANALYSIS

Mudweight = 11.00

Well: New Well

Client:

Date: March 06, 2006



РЕЗУЛЬТАТЫ АНАЛИЗА РАБОТЫ КНБК

The screenshot shows the 'DrillSAFE Inputs' software window. At the top, there are 'Run' and 'Report' buttons. The main input area includes:

- BHA: BHA (Horizontal) ... 2442.91 ft
- Mud Weight Input: 10 lbm/gal
- Navigation tabs: Torque & Drag, BHA Tendency, Bit Side Forces, FF Calibration, Sag & BHA Mag
- Well Parameters:
 - Formation Stiffness: 0.5
 - Bit Inclination: 90 deg
 - Diam Enlarg: 0 in
- Drilling Parameters:
 - Downhole WoB: 10 1000 lbf
 - Tool Face: 0 deg
- Sensitivity Analysis:
 - Single Point
 - Multi-Point

Rotary Build Rate = 0.214 deg/100 ft
DLS in sliding = 12.071 deg/100 ft
Effective Toolface in sliding = 0.000 deg
Build rate in sliding = 12.071 deg/100 ft
Turn rate in sliding = 0.000 deg/100 ft

УСТАНОВКА ОПЦИЙ АНАЛИЗА КРИТИЧЕСКИХ ЧАСТОТ ВРАЩЕНИЯ

Torque & Drag | BHA Tendency | Bit Side Forces | FF Calibration | Sag & BHA Mag | BHA Vibration

Forced Vibration Analysis Free Vibration Analysis

Set / Review Boundary Conditions

Operating Mode
 Rotating Sliding

Position Plots
Critical RPM Plots

Bit Depth: ft BHA Length: ft

Static Bit Forces
Downhole WOB: 1000 lbf

Excitation Sources

Bit Forces Bit Displacements

Excitation Factor:

Manual Input Calculate

Bit Efficiency Coefficient:

Bit Axial Force: 1000 lbf

Bit Bending Moment: 1000 ft.lbf

Bit Torque: 1000 ft.lbf

Bit Bounce

Axial Displacement: ft

Excitation Factor:

Bit Whirl

Hole Enlargement: in

Excitation Factor:

Other Sources

Excitation Frequency / RPM Range

Frequency Input RPM Input

Frequency BHA RPM

Min: Max: Hz Min: Max:

Number of Calculation Intervals:

Excitation Factor:

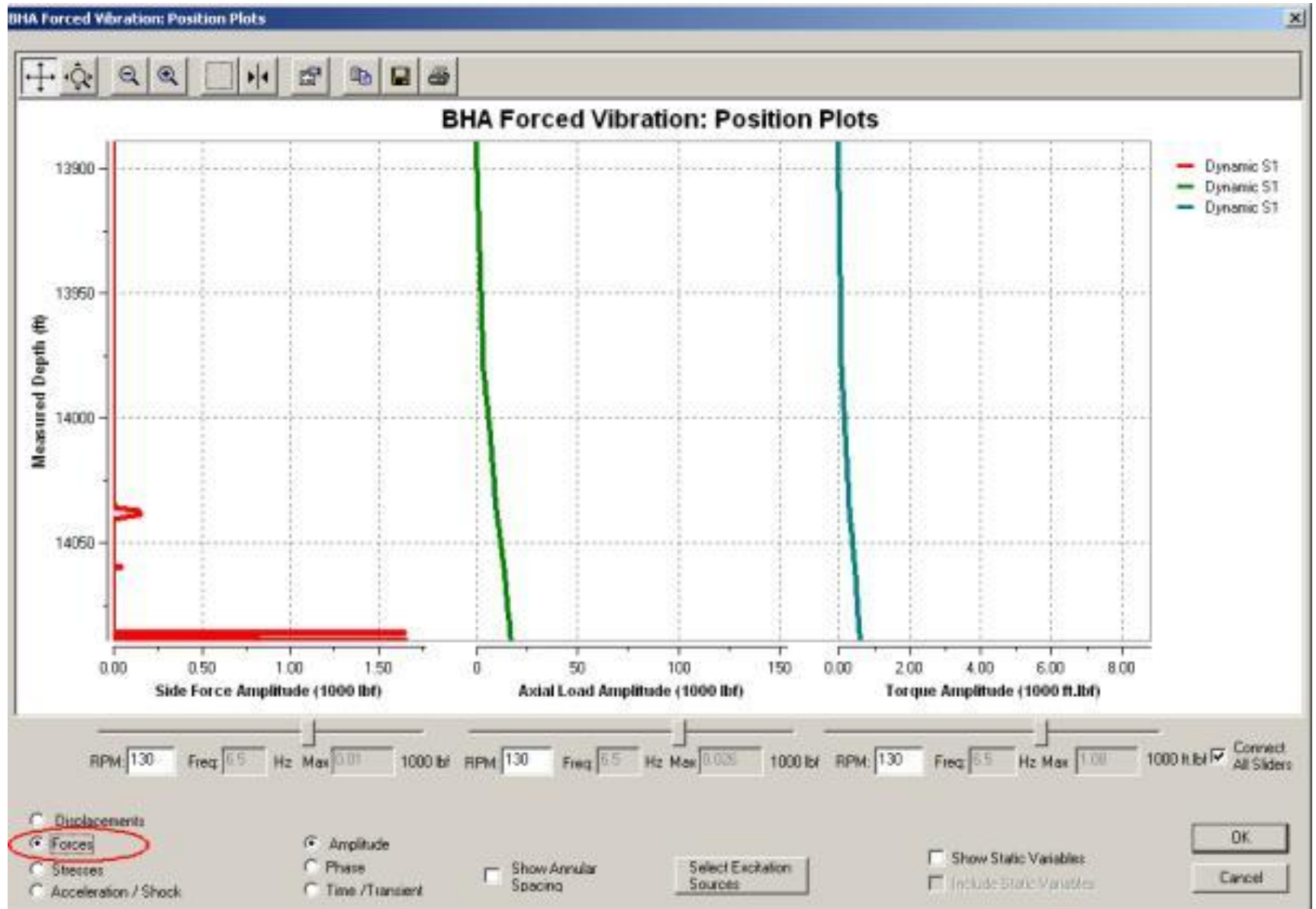
Dynamic Damping

Manual Input Use Default Value

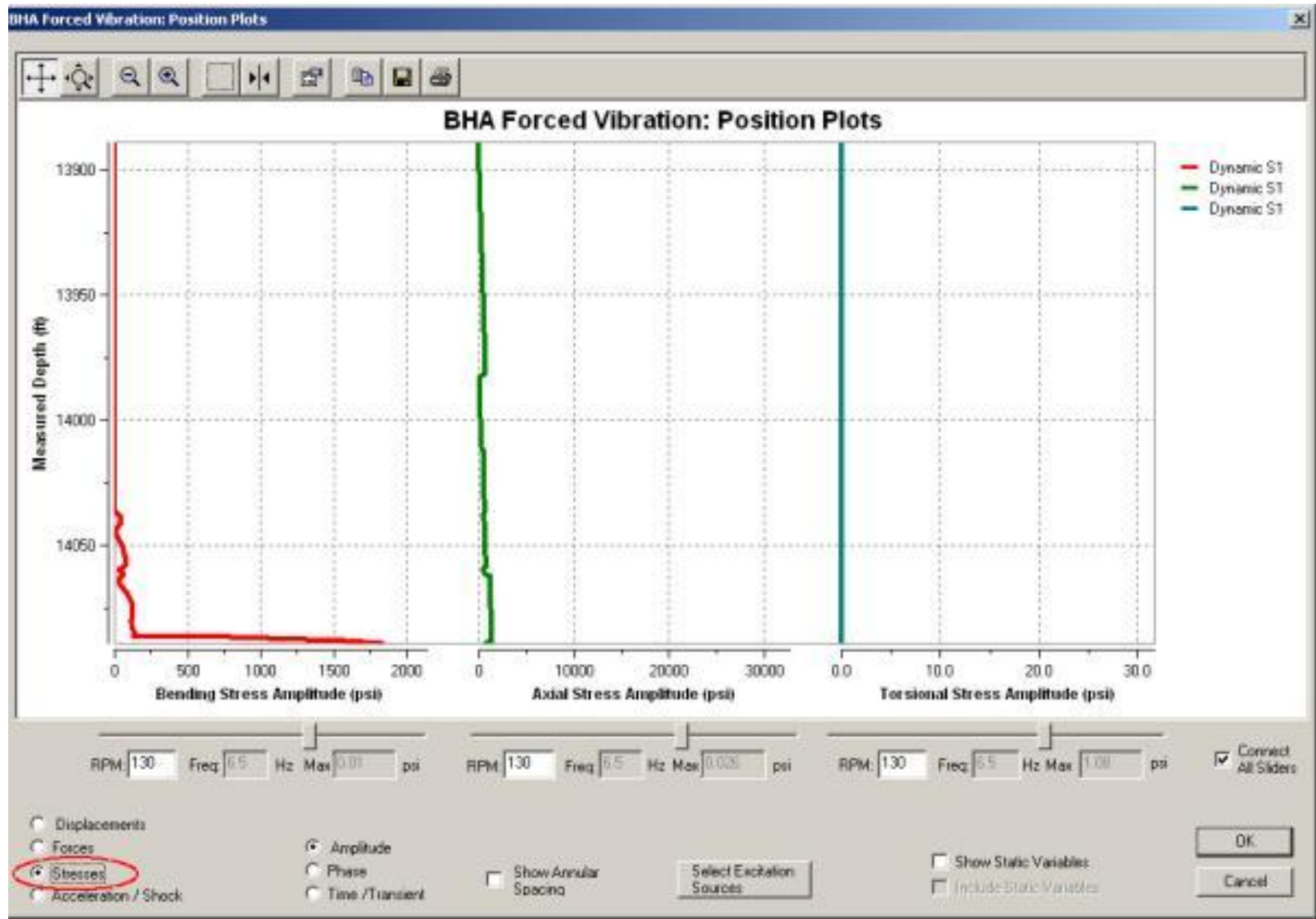
Oil Based Mud Water Based Mud

Viscous Damping Coefficient:

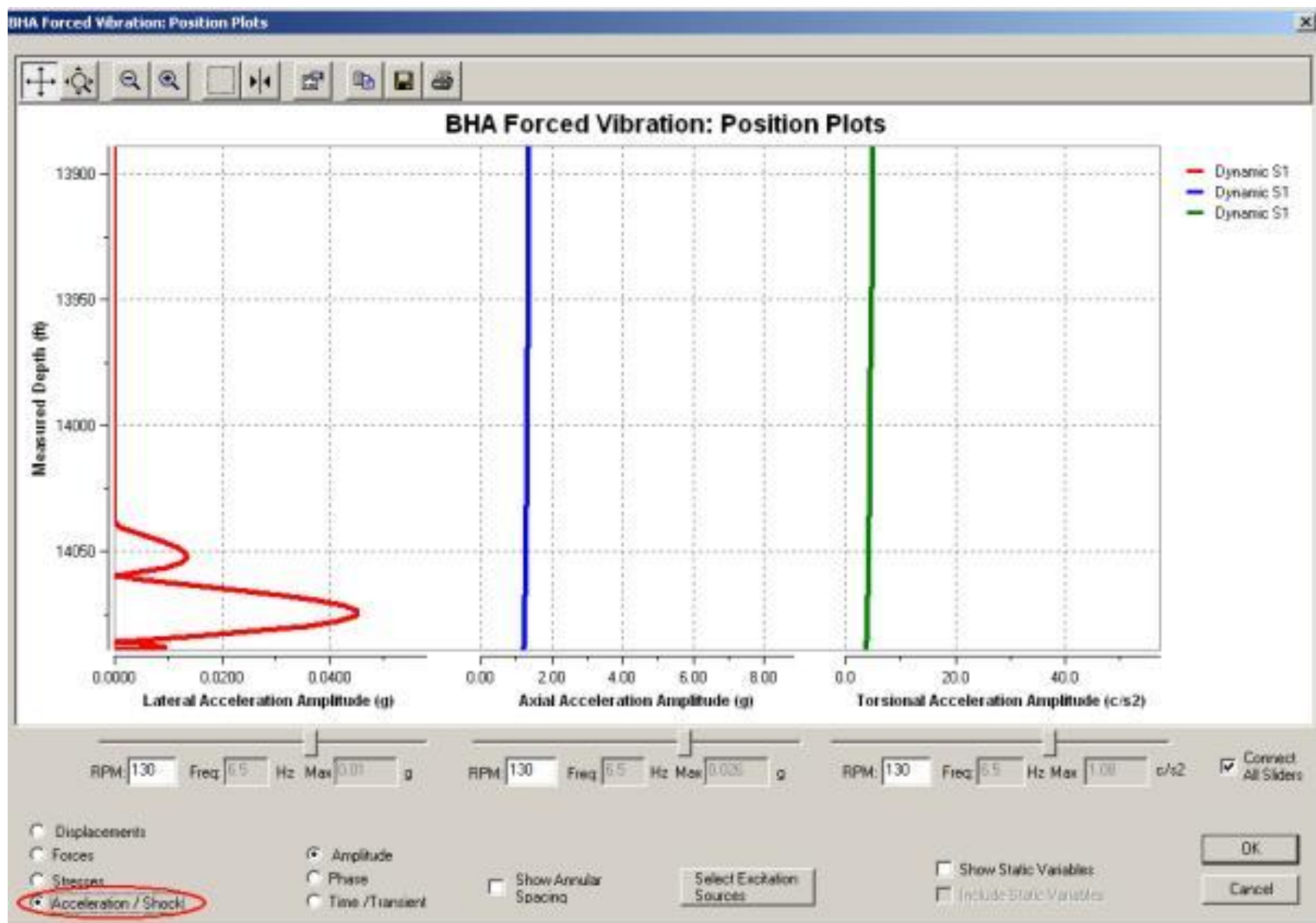
РЕЗУЛЬТАТЫ АНАЛИЗА УСИЛИЙ ПРИ КРИТИЧЕСКОЙ ЧАСТОТЕ



РЕЗУЛЬТАТЫ АНАЛИЗА НАПРЯЖЕНИЙ ПРИ КРИТИЧЕСКОЙ ЧАСТОТЕ



РЕЗУЛЬТАТЫ АНАЛИЗА УСКОРЕНИЙ ПРИ КРИТИЧЕСКОЙ ЧАСТОТЕ



РЕЗУЛЬТАТЫ АНАЛИЗА КРИТИЧЕСКИХ ЧАСТОТ ВРАЩЕНИЯ

