

Appendix F. Support Software Programming Code

F.1 Main.java

```
package kick.views;

import java.awt.EventQueue;

import javax.swing.JFrame;
import javax.swing.JPanel;
import javax.swing.border.EmptyBorder;
import javax.swing.UIManager;
import java.awt.Font;
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JMenuBar;
import javax.swing.JMenu;
import javax.swing.JMenuItem;
import javax.swing.JButton;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JLabel;
import javax.swing.JComboBox;
import javax.swing.JDesktopPane;
import java.awt.SystemColor;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import javax.swing.JRadioButton;
import javax.swing.ButtonGroup;
import java.beans.PropertyChangeListener;
import java.beans.PropertyChangeEvent;

public class Main extends JFrame {

    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JPanel contentPane;
    private JDesktopPane desktopPane;
    private JButton btnSectionAnalysis;
    private JButton btnCalculate;
    private JPanel panelOutput;
    private final ButtonGroup buttonGroup = new ButtonGroup();
    private Section1 try1;
    private Section1_US try1_US;
    private Section2 try2;
    private Section2_US try2_US;
    private Section3 try3;
    private Section3_US try3_US;
    JRadioButton rButtonKick;
    JRadioButton rButtonMud;
    JRadioButton rButtonDepth;
    private JPanel panelCompute;
    int u,n;
    private Notificacions msj1;
    JPanel Panell1;
    private JPanel panelUnits;
    private JButton btnCompute;
    private JButton btnNewButton;
    private JPanel panel;

    /**
     * Launch the application.
     */
}
```

```
public static void main(String[] args) {
    try {

        UIManager.setLookAndFeel(UIManager.getSystemLookAndFeelClassName());
    } catch (Throwable e) {
        e.printStackTrace();
    }
    EventQueue.invokeLater(new Runnable() {
        public void run() {
            try {
                Main frame = new Main();
                frame.setVisible(true);
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    });
}

/**
 * Create the frame.
 */
public Main() {
    setAlwaysOnTop(true);
    setResizable(false);
    initComponents();
    createEvents();
}

private void initComponents(){
    setFont(new Font("Dialog", Font.BOLD, 14));
    setTitle("Kick Tolerance Calculator");
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    setBounds(0, 0, 1280, 725);

    JMenuBar menuBar = new JMenuBar();
    setJMenuBar(menuBar);
    JMenu mnFile = new JMenu("File");
    menuBar.add(mnFile);

    JMenuItem mntmNew = new JMenuItem("New");
    mnFile.add(mntmNew);

    JMenuItem mntmOpen = new JMenuItem("Open");
    mnFile.add(mntmOpen);

    JMenuItem mntmSave = new JMenuItem("Save");
    mnFile.add(mntmSave);

    JMenuItem mntmExit = new JMenuItem("Exit");
    mntmExit.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent arg0) {
            dispose();
        }
    });
    mnFile.add(mntmExit);

    JMenu mnEdit = new JMenu("Edit");
    menuBar.add(mnEdit);

    JMenu mnHelp = new JMenu("Help");
    menuBar.add(mnHelp);

    JMenuItem mntmHelp = new JMenuItem("Help");
```

```
mnHelp.add(mntmHelp);

JMenuItem mntmTutorial = new JMenuItem("Tutorial");
mnHelp.add(mntmTutorial);

JMenuItem mntmAbout = new JMenuItem("About this");
mnHelp.add(mntmAbout);
contentPane = new JPanel();
contentPane.setBorder(new EmptyBorder(5, 5, 5, 5));
setContentPane(contentPane);

JPanel panelOptions = new JPanel();

panelUnits = new JPanel();

desktopPane = new JDesktopPane();
desktopPane.setBackground(SystemColor.inactiveCaption);

panelOutput = new JPanel();
panelOutput.setBackground(UIManager.getColor("CheckBox.background"));

panelCompute = new JPanel();
GroupLayout gl_contentPane = new GroupLayout(contentPane);
gl_contentPane.setHorizontalGroup(
    gl_contentPane.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_contentPane.createSequentialGroup())

    .addGroup(gl_contentPane.createParallelGroup(Alignment.LEADING)

    .addGroup(gl_contentPane.createSequentialGroup()
        .addComponent(panelOptions,
            GroupLayout.PREFERRED_SIZE, 339, GroupLayout.PREFERRED_SIZE)

        .addPreferredGap(ComponentPlacement.RELATED)
        .addComponent(panelUnits,
            GroupLayout.PREFERRED_SIZE, 163, GroupLayout.PREFERRED_SIZE)

        .addPreferredGap(ComponentPlacement.RELATED)
        .addComponent(panelOutput,
            GroupLayout.PREFERRED_SIZE, 479, GroupLayout.PREFERRED_SIZE)

        .addPreferredGap(ComponentPlacement.RELATED)
        .addComponent(panelCompute,
            GroupLayout.DEFAULT_SIZE, 215, Short.MAX_VALUE)
        .addComponent(desktopPane,
            GroupLayout.DEFAULT_SIZE, 1264, Short.MAX_VALUE)
        .addContainerGap()
    );
gl_contentPane.setVerticalGroup(
    gl_contentPane.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_contentPane.createSequentialGroup())

    .addGroup(gl_contentPane.createParallelGroup(Alignment.LEADING)
        .addComponent(panelOptions,
            GroupLayout.DEFAULT_SIZE, 61, Short.MAX_VALUE)
        .addComponent(panelUnits, 0, 0,
            Short.MAX_VALUE)
        .addComponent(panelOutput,
            GroupLayout.DEFAULT_SIZE, 61, Short.MAX_VALUE)
        .addComponent(panelCompute,
            GroupLayout.DEFAULT_SIZE, 61, Short.MAX_VALUE)
        .addPreferredGap(ComponentPlacement.RELATED)
        .addComponent(desktopPane,
            GroupLayout.DEFAULT_SIZE, 592, Short.MAX_VALUE)
        .addContainerGap()
    );
desktopPane.setLayout(null);
```

```
String[] units={"Metric","US"};
final JComboBox cBoxUnits =new JComboBox(units);

btnNewButton = new JButton("Extra Info");
desktopPane.setLayer(btnNewButton, 3);
btnNewButton.setVisible(false);

btnNewButton.setFont(new Font("Lucida Grande", Font.BOLD, 14));
btnNewButton.setBounds(812, 31, 128, 52);
desktopPane.add(btnNewButton);

panel = new JPanel();
desktopPane.setLayer(panel, 3);
panel.setBounds(774, 31, 460, 547);
desktopPane.add(panel);
panel.setVisible(false);

cBoxUnits.setSelectedIndex(0);

final JRadioButton rButtonKick = new JRadioButton("Kick Tolerance");

final JRadioButton rButtonMud = new JRadioButton("Mud Weight");
rButtonMud.addPropertyChangeListener(new PropertyChangeListener() {
    public void propertyChange(PropertyChangeEvent evt) {

    }
});

final JRadioButton rButtonDepth = new JRadioButton("Open Hole Depth");
rButtonDepth.addPropertyChangeListener(new PropertyChangeListener() {
    public void propertyChange(PropertyChangeEvent evt) {

    }
});

JButton btnForm = new JButton("New Form");
btnCompute = new JButton("COMPUTE");
btnCompute.setVisible(false);
btnForm.setToolTipText("");

btnForm.addActionListener(new ActionListener() {

    public void actionPerformed(ActionEvent e) {
        btnNewButton.setVisible(false);
        try1= new Section1();
        try1_US=new Section1_US();
        try2= new Section2();
        try2_US=new Section2_US();
        try3= new Section3();
        try3_US=new Section3_US();

        u = cBoxUnits.getSelectedIndex();
        btnCompute.setVisible(true);
        panel.setVisible(true);
        if(rButtonKick.isSelected()== true)
        {
            if (u==0)
            {
                desktopPane.add(try1);
                try1.show();
                try1_US.hide();
                try2.hide();
```

```
try2_US.hide();
try3.hide();
try3_US.hide();
}
if(u==1)
{
desktopPane.add(try1_US);
try1.hide();
try1_US.show();
try2.hide();
try2_US.hide();
try3.hide();
try3_US.hide();
}
}
else if(rButtonMud.isSelected()==true)
{
if (u==0)
{
desktopPane.add(try2);
try1.hide();
try1_US.hide();
try2.show();
try2_US.hide();
try3.hide();
try3_US.hide();
}
if(u==1)
{
desktopPane.add(try2_US);
try1.hide();
try1_US.hide();
try2.hide();
try2_US.show();
try3.hide();
try3_US.hide();
}
}
else if(rButtonDepth.isSelected()==true)
{
if (u==0)
{
desktopPane.add(try3);
try1.hide();
try1_US.hide();
try2.hide();
try2_US.hide();
try3.show();
try3_US.hide();
}
if(u==1)
{
desktopPane.add(try3_US);
try1.hide();
try1_US.hide();
try2.hide();
try2_US.hide();
try3.hide();
try3_US.show();
}
}
else
{
msj1 = new Notificacions();
JPanel Panel1 = new JPanel();
JLabel lblNewLabel = new JLabel("SELECT AN
OUTPUT!");

lblNewLabel.setFont(new Font("Lucida Grande",
```

```
Font.BOLD, 16));

        Panel1.add(lblNewLabel);
        msjl.getContentPane().add(Panel1);
        Panel1.setVisible(true);
        msjl.setVisible(true);
        msjl.setAlwaysOnTop(true);

    }

});

btnForm.setFont(new Font("Lucida Grande", Font.BOLD, 15));

btnCompute.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        btnNewButton.setVisible(true);

    }
});

btnCompute.setFont(new Font("Lucida Grande", Font.BOLD, 14));
GroupLayout gl_panelCompute = new GroupLayout(panelCompute);
gl_panelCompute.setHorizontalGroup(
    gl_panelCompute.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panelCompute.createSequentialGroup()
            .addContainerGap()
            .addComponent(btnForm)
            .addPreferredGap(ComponentPlacement.RELATED,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(btnCompute)
            .addContainerGap()
        )
);
gl_panelCompute.setVerticalGroup(
    gl_panelCompute.createParallelGroup(Alignment.LEADING)
        .addGroup(Alignment.TRAILING,
gl_panelCompute.createSequentialGroup()
            .addContainerGap()

        .addGroup(gl_panelCompute.createParallelGroup(Alignment.TRAILING)
            .addComponent(btnCompute, Alignment.LEADING,
GroupLayout.DEFAULT_SIZE, 52, Short.MAX_VALUE)
            .addComponent(btnForm, Alignment.LEADING,
GroupLayout.DEFAULT_SIZE, 52, Short.MAX_VALUE)
            .addContainerGap()
        )
);
panelCompute.setLayout(gl_panelCompute);
panelCompute.setVisible(false);
panelOutput.setLayout(null);

JLabel label = new JLabel("Output:\n");
label.setFont(new Font("Lucida Grande", Font.BOLD, 14));
label.setBounds(16, 6, 59, 17);
panelOutput.add(label);
panelOutput.setVisible(false);

buttonGroup.add(rButtonKick);
rButtonKick.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
rButtonKick.setBounds(67, 30, 132, 23);
panelOutput.add(rButtonKick);

buttonGroup.add(rButtonMud);
rButtonMud.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
rButtonMud.setBounds(199, 30, 121, 23);
panelOutput.add(rButtonMud);

buttonGroup.add(rButtonDepth);
```

```
rButtonDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
rButtonDepth.setBounds(322, 30, 151, 23);
panelOutput.add(rButtonDepth);

JLabel lblUnits = new JLabel("UNITS:");
lblUnits.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

GroupLayout gl_panelUnits = new GroupLayout(panelUnits);
gl_panelUnits.setHorizontalGroup(
    gl_panelUnits.createParallelGroup(Alignment.TRAILING)
        .addGroup(gl_panelUnits.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblUnits, GroupLayout.DEFAULT_SIZE,
672, Short.MAX_VALUE)
            .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(cBoxUnits,
GroupLayout.PREFERRED_SIZE, 101, GroupLayout.PREFERRED_SIZE)
            .addGap(5)
        );
gl_panelUnits.setVerticalGroup(
    gl_panelUnits.createParallelGroup(Alignment.TRAILING)
        .addGroup(gl_panelUnits.createSequentialGroup()
            .addContainerGap(25, Short.MAX_VALUE)

            .addGroup(gl_panelUnits.createParallelGroup(Alignment.BASELINE)
                .addComponent(lblUnits)
                .addComponent(cBoxUnits,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
            .addGap(19)
        );
panelUnits.setLayout(gl_panelUnits);
panelUnits.setVisible(false);

JButton btnFullWellAnalysis = new JButton("Full Well Analysis");
btnFullWellAnalysis.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

btnSectionAnalysis = new JButton("Section Analysis");

btnSectionAnalysis.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
GroupLayout gl_panelOptions = new GroupLayout(panelOptions);
gl_panelOptions.setHorizontalGroup(
    gl_panelOptions.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panelOptions.createSequentialGroup()
            .addComponent(btnFullWellAnalysis)
            .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(btnSectionAnalysis,
GroupLayout.PREFERRED_SIZE, 166, GroupLayout.PREFERRED_SIZE)
            .addContainerGap(44, Short.MAX_VALUE)
        );
gl_panelOptions.setVerticalGroup(
    gl_panelOptions.createParallelGroup(Alignment.TRAILING)
        .addGroup(gl_panelOptions.createSequentialGroup()
            .addContainerGap(9, Short.MAX_VALUE)

            .addGroup(gl_panelOptions.createParallelGroup(Alignment.BASELINE)
                .addComponent(btnFullWellAnalysis,
GroupLayout.PREFERRED_SIZE, 46, GroupLayout.PREFERRED_SIZE)
                .addComponent(btnSectionAnalysis,
GroupLayout.PREFERRED_SIZE, 44, GroupLayout.PREFERRED_SIZE)
            .addContainerGap()
        );
panelOptions.setLayout(gl_panelOptions);
contentPane.setLayout(gl_contentPane);
```

```
cBoxUnits.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {

        try1.setVisible(false);
        try1_US.setVisible(false);
        try2.setVisible(false);
        try2_US.setVisible(false);
        try3.setVisible(false);
        try3_US.setVisible(false);
        btnCompute.setVisible(false);
        btnNewButton.setVisible(false);

    }
});

btnNewButton.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        //n = cBoxUnits.getSelectedIndex();

        //if(rButtonKick.isSelected()== true)
        //{
            //if (n==0)
            //{
                panel.setVisible(false);

            //}
            //if(n==1)
            //{

            //}

        //}

        btnNewButton.setVisible(false);
    }
});

}

private void createEvents(){
    btnSectionAnalysis.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent arg0) {
            panelOutput.setVisible(true);
            panelCompute.setVisible(true);
            panelUnits.setVisible(true);
        }
    });
}

}
```

F.2 Section1.java

```
package kick.views;

import javax.swing.JInternalFrame;
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JPanel;
import javax.swing.JLabel;
import java.awt.Font;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import java.awt.Color;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import java.awt.event.FocusAdapter;
```



```
import java.awt.event.FocusEvent;
import java.text.DecimalFormat;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Section1 extends JInternalFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    public JTextField textField;
    private JTextField textField_1;
    private JTextField textField_2;
    private JTextField textField_3;
    private JTextField textField_4;
    private JTextField textField_5;
    private JTextField textField_6;
    private JTextField textField_7;
    private JTextField textField_8;
    private JTextField textField_9;
    private JTextField textField_10;
    private JTextField textField_11;
    private JTextField textField_12;
    private JTextField textField_13;
    private JTextField textField_14;
    private JTextField textField_15;
    private JTextField textField_16;
    private JTextField textField_17;
    double Csize, Csize2, Cmdepth, Ctvdepth, Cashoe;
    double Hmdepth, Htvdepth, Hatd;
    double Hsize, Hsize2;
    double BHA, BHAod, DClenght, DCod, DPod;
    double Mweight, Influx, Ppres, Fgrad, Temps, Temptd;
    double Choke, Smargin;
    double MinKick, KickTol;
    double Cap1, Cap1b, Cap1c, Cap2, Cap3;
    double Dist1, FracPreS, FracPreTD, TempGrad;
    double Vol1, Vol2, Vol3, InfluxDen;
    double InfluxH, LenghtS, LenghtTD, KickSize, KickSizeS, Gas, MAASP, trial;

    double x, y;

    private JComboBox comboBox;
    private JComboBox comboBox_2;
    private JComboBox comboBox_3;
    private JComboBox comboBox_4;
    private JComboBox comboBox_1;
    double internals[];
    double HoleSize[];
    double BHASize[];
    double DCSize[];
    double DPSize[];
    private DecimalFormat df, df2;
    private JTextField textField_18;
    private JTextField textField_19;
    private JTextField textField_20;
    private JTextField textField_21;
    private JTextField textField_22;
    private JTextField textField_23;
    private JTextField textField_24;
    private JTextField textField_25;
    private JTextField textField_26;
    private JTextField textField_27;
    private JTextField textField_28;
    private JTextField textField_29;
```

```
private JTextField textField_30;
private JTextField txtM;
private JTextField textField_31;
private JTextField textField_32;
private JTextField textField_33;
private JTextField textField_34;
private JTextField textField_35;

/**
 * Create the frame.
 */
public Section1() {
    setTitle("Section Analysis - Kick Tolerance");
    setIconifiable(true);
    setClosable(true);
    setBounds(0, 0, 1250, 600);

    df = new DecimalFormat("#.#");
    df2 = new DecimalFormat("#.###");
    JPanel panel = new JPanel();

    JPanel panel_1 = new JPanel();

    JPanel panel_2 = new JPanel();

    JPanel panel_3 = new JPanel();

    JPanel panel_4 = new JPanel();

    JPanel panel_5 = new JPanel();

    JPanel panel_6 = new JPanel();
    GroupLayout groupLayout = new GroupLayout(getContentPane());
    groupLayout.setHorizontalGroup(
        groupLayout.createParallelGroup(Alignment.LEADING)
            .addGroup(groupLayout.createSequentialGroup()
                .addContainerGap()

                .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                    .addComponent(panel_5, 0, 0,
Short.MAX_VALUE)

                    .addGroup(groupLayout.createSequentialGroup()

                        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                            .addComponent(panel_4,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                            .addComponent(panel_2, 0, 0,
Short.MAX_VALUE)

                            .addComponent(panel,
GroupLayout.DEFAULT_SIZE, 342, Short.MAX_VALUE))

                        .addPreferredGap(ComponentPlacement.RELATED)

                        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                            .addComponent(panel_1,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                            .addComponent(panel_3,
GroupLayout.DEFAULT_SIZE, 360, Short.MAX_VALUE)))

                        .addPreferredGap(ComponentPlacement.RELATED, 88,
Short.MAX_VALUE)

                        .addComponent(panel_6, GroupLayout.PREFERRED_SIZE,
449, GroupLayout.PREFERRED_SIZE)

                        .addContainerGap()

                    );
                groupLayout.setVerticalGroup(
```

```
        groupLayout.createParallelGroup(Alignment.LEADING)
            .addGroup(groupLayout.createSequentialGroup())
            .addContainerGap()

        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
            .addComponent(panel_6,
                GroupLayout.DEFAULT_SIZE, 555, Short.MAX_VALUE)

        .addGroup(groupLayout.createSequentialGroup())

        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)

        .addGroup(groupLayout.createSequentialGroup())
            .addComponent(panel,
                GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addGap(6))

        .addGroup(groupLayout.createSequentialGroup())
            .addComponent(panel_1,
                GroupLayout.PREFERRED_SIZE, 170, Short.MAX_VALUE)

        .addPreferredGap(ComponentPlacement.RELATED))

        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)

        .addGroup(groupLayout.createSequentialGroup())
            .addComponent(panel_2,
                GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

        .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(panel_4,
                GroupLayout.PREFERRED_SIZE, 97, GroupLayout.PREFERRED_SIZE))
            .addComponent(panel_3,
                GroupLayout.DEFAULT_SIZE, 301, Short.MAX_VALUE))

        .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(panel_5,
                GroupLayout.PREFERRED_SIZE, 72, GroupLayout.PREFERRED_SIZE))
            .addContainerGap()
    );
    panel_6.setLayout(new FormLayout(new ColumnSpec[] {
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("max(8dlu;default)"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC, },
        new RowSpec[] {
            FormFactory.RELATED_GAP_ROWSPEC,
            FormFactory.DEFAULT_ROWSPEC,
            FormFactory.RELATED_GAP_ROWSPEC,
            FormFactory.DEFAULT_ROWSPEC,
            FormFactory.RELATED_GAP_ROWSPEC,
            FormFactory.DEFAULT_ROWSPEC,
            FormFactory.RELATED_GAP_ROWSPEC,
```

[illegible]

```
textField_21 = new JTextField();
panel_6.add(textField_21, "8, 8, 2, 1, fill, default");
textField_21.setColumns(10);

JLabel lblBbl_1 = new JLabel("m^3");
panel_6.add(lblBbl_1, "11, 8");

JLabel lblCasingDrill = new JLabel("Casing - Drill Pipe");
panel_6.add(lblCasingDrill, "2, 10, left, default");

textField_22 = new JTextField();
panel_6.add(textField_22, "3, 10, 2, 1, fill, default");
textField_22.setColumns(10);

JLabel lblBblft_2 = new JLabel("l/m");
panel_6.add(lblBblft_2, "6, 10");

textField_23 = new JTextField();
panel_6.add(textField_23, "8, 10, 2, 1, fill, default");
textField_23.setColumns(10);

JLabel lblBbl_2 = new JLabel("m^3");
panel_6.add(lblBbl_2, "11, 10, default, center");

JLabel lblDistanceTopDrill = new JLabel("Distance top Drill Collar to
Casing Shoe");
panel_6.add(lblDistanceTopDrill, "2, 12, 5, 1");

textField_24 = new JTextField();
panel_6.add(textField_24, "7, 12, 3, 1, fill, default");
textField_24.setColumns(10);

JLabel lblM_1 = new JLabel("m");
panel_6.add(lblM_1, "11, 12");

JLabel lblNewLabel_1 = new JLabel("Temperature Gradient");
panel_6.add(lblNewLabel_1, "2, 14");

textField_25 = new JTextField();
panel_6.add(textField_25, "7, 14, 3, 1, fill, default");
textField_25.setColumns(10);

JLabel lblcm = new JLabel("\u00BAC/30m");
panel_6.add(lblcm, "11, 14");

JLabel lblCasingShoe = new JLabel("Fracture Pressure @ Casing Shoe");
panel_6.add(lblCasingShoe, "2, 16, left, default");

textField_27 = new JTextField();
panel_6.add(textField_27, "7, 16, 3, 1, fill, default");
textField_27.setColumns(10);

JLabel lblNewLabel_3 = new JLabel("bar");
panel_6.add(lblNewLabel_3, "11, 16, left, default");

JLabel lblTotalDepth = new JLabel("Fracture Gradient @ Total Depth");
panel_6.add(lblTotalDepth, "2, 18");

textField_26 = new JTextField();
panel_6.add(textField_26, "7, 18, 3, 1, fill, default");
textField_26.setColumns(10);

JLabel lblNewLabel_2 = new JLabel("bar");
panel_6.add(lblNewLabel_2, "11, 18, default, bottom");

JLabel lblAllo = new JLabel("Allowable Influx Height");
panel_6.add(lblAllo, "2, 20");
```

```
textField_28 = new JTextField();
panel_6.add(textField_28, "7, 20, 3, 1, fill, default");
textField_28.setColumns(10);

JLabel lblBar = new JLabel("m TVD");
panel_6.add(lblBar, "11, 20");

JLabel lblNewLabel_4 = new JLabel("Lenght of Kick @ Casing Shoe");
panel_6.add(lblNewLabel_4, "2, 22");

textField_29 = new JTextField();
panel_6.add(textField_29, "7, 22, 3, 1, fill, default");
textField_29.setColumns(10);

JLabel lblM_2 = new JLabel("m MD");
panel_6.add(lblM_2, "11, 22");

JLabel lblLenghtOfKick = new JLabel("Lenght of Kick @ True Depth");
panel_6.add(lblLenghtOfKick, "2, 24");

textField_30 = new JTextField();
panel_6.add(textField_30, "7, 24, 3, 1, fill, default");
textField_30.setColumns(10);

JLabel lblM_3 = new JLabel("m MD");
panel_6.add(lblM_3, "11, 24");

JLabel lblShutIn = new JLabel("Kick Size on Shut in");
panel_6.add(lblShutIn, "2, 26");

txtM = new JTextField();
panel_6.add(txtM, "7, 26, 3, 1, fill, default");
txtM.setColumns(10);

JLabel lblNewLabel_5 = new JLabel("m^3");
panel_6.add(lblNewLabel_5, "11, 26");

JLabel lblKickSize = new JLabel("Kick Size @ Shoe");
panel_6.add(lblKickSize, "2, 28");

textField_31 = new JTextField();
panel_6.add(textField_31, "7, 28, 3, 1, fill, default");
textField_31.setColumns(10);

JLabel lblNewLabel_6 = new JLabel("m^3");
panel_6.add(lblNewLabel_6, "11, 28");

JLabel lblGas = new JLabel("Gas - Shoe Back to Total Depth");
panel_6.add(lblGas, "2, 30");

textField_32 = new JTextField();
panel_6.add(textField_32, "7, 30, 3, 1, fill, default");
textField_32.setColumns(10);

JLabel lblNewLabel_7 = new JLabel("m^3");
panel_6.add(lblNewLabel_7, "11, 30");

JLabel lblMaasp = new JLabel("MAASP");
panel_6.add(lblMaasp, "2, 32");

textField_33 = new JTextField();
panel_6.add(textField_33, "7, 32, 3, 1, fill, default");
textField_33.setColumns(10);

JLabel lblBar_1 = new JLabel("bar");
panel_6.add(lblBar_1, "11, 32");
```

```
textField_34 = new JTextField();
textField_34.setFont(new Font("Lucida Grande", Font.BOLD, 14));
panel_6.add(textField_34, "2, 34, 10, 1, fill, default");
textField_34.setColumns(10);

JLabel lblNewLabel = new JLabel("Kick Tolerance");
lblNewLabel.setForeground(Color.RED);
lblNewLabel.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMinKickTolerance = new JLabel("Kick Tolerance:");
lblMinKickTolerance.setForeground(Color.RED);
lblMinKickTolerance.setFont(new Font("Lucida Grande", Font.BOLD, 14));

textField_16 = new JTextField();
textField_16.setForeground(Color.RED);
textField_16.setFont(new Font("Lucida Grande", Font.BOLD, 13));
textField_16.setColumns(10);

JLabel lblUnit_12 = new JLabel("m^3");
lblUnit_12.setFont(new Font("Lucida Grande", Font.BOLD, 14));
lblUnit_12.setForeground(Color.RED);

JLabel lblCalculatedKickTolerance = new JLabel("Calculated Kick
Tolerance:");
lblCalculatedKickTolerance.setForeground(Color.RED);
lblCalculatedKickTolerance.setFont(new Font("Lucida Grande",
Font.BOLD, 14));

textField_17 = new JTextField();
textField_17.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_17.setForeground(Color.RED);
textField_17.setColumns(10);

JLabel lblUnit_13 = new JLabel("m^3");
lblUnit_13.setForeground(Color.RED);
lblUnit_13.setFont(new Font("Lucida Grande", Font.BOLD, 14));

JLabel lblSuggested = new JLabel("Suggested");
lblSuggested.setForeground(Color.RED);
lblSuggested.setFont(new Font("Lucida Grande", Font.BOLD, 14));
GridLayout gl_panel_5 = new GridLayout(panel_5);
gl_panel_5.setHorizontalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup())

.addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup()
        .addContainerGap()
        .addComponent(lblMinKickTolerance))
    .addGroup(gl_panel_5.createSequentialGroup()
        .addGap(22)
        .addComponent(lblSuggested)))

.addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup()

.addPreferredGap(ComponentPlacement.RELATED)
    .addComponent(textField_16,
        GroupLayout.PREFERRED_SIZE, 111, GroupLayout.PREFERRED_SIZE)

.addPreferredGap(ComponentPlacement.RELATED)
    .addComponent(lblUnit_12)

.addPreferredGap(ComponentPlacement.RELATED, 77, Short.MAX_VALUE)

.addComponent(lblCalculatedKickTolerance)
```

```
.addPreferredGap(ComponentPlacement.RELATED)
    .addComponent(textField_17,
GroupLayout.PREFERRED_SIZE, 110, GroupLayout.PREFERRED_SIZE)
    .addGap(18)
    .addComponent(lblUnit_13))
    .addGroup(gl_panel_5.createSequentialGroup())
    .addGap(160)
    .addComponent(lblNewLabel))
    .addContainerGap()
);
gl_panel_5.setVerticalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup())

.addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup())
    .addContainerGap()
    .addComponent(lblNewLabel)
    .addGap(5)

.addGroup(gl_panel_5.createParallelGroup(Alignment.BASELINE)

.addComponent(lblMinKickTolerance)
    .addComponent(lblUnit_12)
    .addComponent(textField_16,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_13)
    .addComponent(textField_17,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(lblCalculatedKickTolerance)))
    .addGroup(gl_panel_5.createSequentialGroup())
    .addGap(25)
    .addComponent(lblSuggested))
    .addContainerGap(12, Short.MAX_VALUE)
);
panel_5.setLayout(gl_panel_5);

JLabel lblSafetyDetails = new JLabel("SAFETY DETAILS");
lblSafetyDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblChokeLoss = new JLabel("Choke Loss:");
lblChokeLoss.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_14 = new JTextField();
textField_14.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Choke = Double.parseDouble(textField_14.getText());
        calcular();
    }
});
textField_14.setColumns(10);

JLabel lblSafetyMargin = new JLabel("Safety Margin:");
lblSafetyMargin.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_15 = new JTextField();
textField_15.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Smargin = Double.parseDouble(textField_15.getText());
        calcular();
    }
});
textField_15.setColumns(10);
```



```
JLabel lblUnit_10 = new JLabel("bar");

JLabel lblUnit_11 = new JLabel("bar");
GroupLayout gl_panel_4 = new GroupLayout(panel_4);
gl_panel_4.setHorizontalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup())

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_4.createSequentialGroup()
        .addGap(112)
        .addComponent(lblSafetyDetails))
    .addGroup(gl_panel_4.createSequentialGroup()
        .addContainerGap()

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblChokeLoss)
    .addComponent(lblSafetyMargin))
    .addGap(40)

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING, false)
    .addComponent(textField_15, 0,
0, Short.MAX_VALUE)
    .addComponent(textField_14,
GroupLayout.DEFAULT_SIZE, 126, Short.MAX_VALUE))
    .addGap(18)

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblUnit_11)
    .addComponent(lblUnit_10)))
    .addContainerGap(29, GroupLayout.PREFERRED_SIZE))
);
gl_panel_4.setVerticalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblSafetyDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblChokeLoss)
    .addComponent(textField_14,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_10))
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblSafetyMargin)
    .addComponent(textField_15,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_11))
    .addContainerGap(67, Short.MAX_VALUE))
);
panel_4.setLayout(gl_panel_4);

JLabel lblPressureDetails = new JLabel("PRESSURE DETAILS");
lblPressureDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMudWeight = new JLabel("Mud Weight:");
lblMudWeight.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblInfluxDensity = new JLabel("Influx Density:");
lblInfluxDensity.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblPorePressure = new JLabel("Pore Pressure @ TD:");
lblPorePressure.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
```

```
JLabel lblFractureGradient = new JLabel("Fracture Gradient @ Shoe:");
lblFractureGradient.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblTemperatureShoe = new JLabel("Temperature @ Shoe:");
lblTemperatureShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTemperatureTd = new JLabel("Temperature @ TD:");
lblTemperatureTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_8 = new JTextField();
textField_8.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Mweight = Double.parseDouble(textField_8.getText());
        calcular();
    }
});
textField_8.setColumns(10);

textField_9 = new JTextField();
textField_9.setForeground(Color.BLUE);
textField_9.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Influx = Double.parseDouble(textField_9.getText());
        calcular();
    }
});
textField_9.setColumns(10);

textField_10 = new JTextField();
textField_10.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ppres = Double.parseDouble(textField_10.getText());
        calcular();
    }
});
textField_10.setColumns(10);

textField_11 = new JTextField();
textField_11.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Fgrad = Double.parseDouble(textField_11.getText());
        calcular();
    }
});
textField_11.setColumns(10);

textField_12 = new JTextField();
textField_12.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temps = Double.parseDouble(textField_12.getText());
        calcular();
    }
});
textField_12.setColumns(10);

textField_13 = new JTextField();
textField_13.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temptd = Double.parseDouble(textField_13.getText());
```

```
        calcular();
    }
});
textField_13.setColumns(10);

JLabel lblUnit_6 = new JLabel("SG");

JLabel lblUnit_7 = new JLabel("SG");

JLabel lblUnit_8 = new JLabel("EMW -SG");

JLabel lblUnit_9 = new JLabel("EMW -SG");

JLabel lblunit = new JLabel("\u00BAC");

JLabel lblunit_1 = new JLabel("\u00BAC");

textField_35 = new JTextField();
textField_35.setVisible(false);
textField_35.setColumns(10);
GridLayout gl_panel_3 = new GridLayout(panel_3);
gl_panel_3.setHorizontalGroup(
    gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup()
            .addContainerGap()

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_3.createSequentialGroup()
                .addComponent(lblMudWeight)
                .addGap(45)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(lblPressureDetails)

.addGroup(gl_panel_3.createSequentialGroup()

                                .addGap(6)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(textField_9, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(textField_8, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(textField_10, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(textField_11, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
88, GroupLayout.PREFERRED_SIZE)

.addComponent(textField_12, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
116, GroupLayout.PREFERRED_SIZE))

                                .addGap(18)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(lblUnit_9)

.addComponent(lblunit)

.addComponent(lblUnit_8)

.addComponent(lblUnit_7)

.addComponent(lblUnit_6))))))
```

```
.addComponent(lblInfluxDensity)
.addComponent(lblPorePressure)
.addComponent(lblFractureGradient)
.addComponent(lblTemperatureShoe)
.addGroup(gl_panel_3.createSequentialGroup()
    .addComponent(lblTemperatureTd)

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
    .addComponent(textField_35,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addGroup(gl_panel_3.createSequentialGroup()

.addComponent(textField_13, GroupLayout.PREFERRED_SIZE,
 GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addGap(18)

.addComponent(lblunit_1))))
    .addGap(0)
);
gl_panel_3.setVerticalGroup(
    gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblPressureDetails)
            .addPreferredGap(ComponentPlacement.UNRELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblMudWeight)
    .addComponent(textField_8,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_6))
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblInfluxDensity)
    .addComponent(textField_9,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_7))
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblPorePressure)
    .addComponent(textField_10,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_8))
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblFractureGradient)
    .addComponent(textField_11,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_9))
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblTemperatureShoe)
    .addComponent(textField_12,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblunit))
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblTemperatureTd)
    .addComponent(textField_13,
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GridLayout.PREFERRED_SIZE, GridLayout.DEFAULT_SIZE, GridLayout.PREFERRED_SIZE)
    .addComponent(lblunit_1))
    .addPreferredGap(ComponentPlacement.UNRELATED)
    .addComponent(textField_35,
GridLayout.PREFERRED_SIZE, GridLayout.DEFAULT_SIZE, GridLayout.PREFERRED_SIZE)
    .addContainerGap(25, Short.MAX_VALUE))
);
panel_3.setLayout(gl_panel_3);

JLabel lblBhaLenght = new JLabel("BHA Lenght");
lblBhaLenght.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblStringDetails = new JLabel("STRING DETAILS");
lblStringDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblOd = new JLabel("BHA OD:");
lblOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillCollarLenght = new JLabel("Drill Collar Lenght:");
lblDrillCollarLenght.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblOd_1 = new JLabel("Drill Collar OD:");
lblOd_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillPipeOd = new JLabel("Drill Pipe OD:");
lblDrillPipeOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_6 = new JTextField();
textField_6.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        BHA = Double.parseDouble(textField_6.getText());
        calcular();
    }
});
textField_6.setColumns(10);

String[] BHACombo={"", "9 1/2'", "8'", "6 1/2'", "4 3/4'", "3 1/2'"};
comboBox_2 = new JComboBox(BHACombo);
comboBox_2.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {
        int a= comboBox_2.getSelectedIndex();
        BHASize= new double[] {0,9.5,8,6.5,4.75,3.5};
        BHAod= BHASize[a];
        calcular();
    }
});

textField_7 = new JTextField();
textField_7.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        DCLenght = Double.parseDouble(textField_7.getText());
        calcular();
    }
});
textField_7.setColumns(10);

String[] Collar={"", "9 1/2'", "8 1/4'", "8'", "7 1/4'", "7'", "6
3/4'", "6 1/2'", "6 1/4'", "6'", "5'", "4 3/4'", "4 1/8'", "3 1/2'", "3 1/8'"};
comboBox_3 = new JComboBox(Collar);
comboBox_3.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int b= comboBox_3.getSelectedIndex();
        DCSize= new double[]
{0,9.5,8.25,8,7.25,7,6.75,6.5,6.25,6,5,4.75,4.125,3.5,3.125};
```

```

        DCoD= DCSIZE[b];
        calcular();
    }
});

String[] Pipe={"", "6 5/8'", "5 1/2'", "5'", "4 1/2'", "4'", "3
1/2'", "2 7/8'", "2 3/8'"};
comboBox_4 = new JComboBox(Pipe);
comboBox_4.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {

        int c= comboBox_4.getSelectedIndex();
        DPSIZE= new double[]
{0,6.625,5.5,5,4.5,4,3.5,2.875,2.375};
        DPOD= DPSIZE[c];
        calcular();

    }
});

JLabel lblUnit_4 = new JLabel("m");

JLabel lblUnit_5 = new JLabel("m");
lblUnit_5.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel_2 = new GroupLayout(panel_2);
gl_panel_2.setHorizontalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_2.createSequentialGroup()
                .addGap(116)
                .addComponent(lblStringDetails))
            .addGroup(gl_panel_2.createSequentialGroup()
                .addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addComponent(lblBhaLenght)
            .addComponent(lblOd))
            .addGap(55)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
            .addComponent(comboBox_2, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(textField_6))
            .addGap(18)
            .addComponent(lblUnit_4))
            .addGroup(gl_panel_2.createSequentialGroup()
                .addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)

.addComponent(lblDrillCollarLenght)

.addComponent(lblOd_1)
.addComponent(lblDrillPipeOd))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
            .addComponent(comboBox_4, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(comboBox_3, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(textField_7))
            .addGap(18)
            .addComponent(lblUnit_5))
            .addContainerGap(81, Short.MAX_VALUE))

```

```
);
gl_panel_2.setVerticalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup())
            .addContainerGap()
            .addComponent(lblStringDetails)
            .addGap(5)

        .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblBhaLenght)
            .addComponent(textField_6,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_4))
        .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblOd)
        .addComponent(comboBox_2,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblDrillCollarLenght)
        .addComponent(textField_7,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_5))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblOd_1)
        .addComponent(comboBox_3,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addComponent(comboBox_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblDrillPipeOd)
        .addContainerGap(GroupLayout.DEFAULT_SIZE,
 Short.MAX_VALUE)
    );
panel_2.setLayout(gl_panel_2);

JLabel lblHoleSize = new JLabel("Hole Size:");
lblHoleSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblMeasuredDepth_1 = new JLabel("Measured Depth:");
lblMeasuredDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth_1 = new JLabel("TV Depth:");
lblTvDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleTd = new JLabel("Angle @ TD:");
lblAngleTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

String[] Hole={"", "36'", "33'", "32 3/8'", "32
1/4'", "32'", "31'", "28'", "26'", "24'", "23 1/2'", "23'", "22'", "21
3/4'", "20'", "19 1/4'", "18 1/2'", "18 1/8'", "17 1/2'", "17'", "16'", "15
1/2'", "15'", "14 3/4'", "14 1/2'", "13 3/4'", "13 1/2'", "12 1/4'", "12'", "11
5/8'", "10 5/8'", "9 7/8'", "9 1/2'", "8 3/4'", "8 5/8'", "8 1/2'", "8 3/8'", "7
7/8'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6 1/8'", "6'", "5 7/8'", "5 5/8'", "5
1/2'", "5'", "4 7/8'", "4 3/4'", "4 5/8'", "4 1/2'", "4 1/8'", "3 7/8'", "3
3/4'"};

comboBox_1 = new JComboBox(Hole);
comboBox_1.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
```

```
int d= comboBox_1.getSelectedIndex();
HoleSize= new double[]
{0.0,36,33,32.375,32.25,32,31,28,26,24,23.5,23,22,21.75,20,19.25,18.5,18.125,17.5,1
7,16,15.5,15,14.75,14.5,13.75,13.5,12.25,12,11.625,10.625,9.875,9.5,8.75,8.625,8.5,
8.375,7.875,7,6.75,6.5,6.25,6.125,6,5.875,5.625,5.5,5,4.875,4.75,4.625,4.5,4.125,3.
875,3.75};

Hsize= HoleSize[d];
if (Hsize>12.25)
{
textField_16.setText("8.0");
}
if (Hsize<=12.25)
{
textField_16.setText("4.0");
}
calcular();
}

});

textField_3 = new JTextField();
textField_3.addFocusListener(new FocusAdapter() {
@Override
public void focusLost(FocusEvent e) {
Hmdepth = Double.parseDouble(textField_3.getText());
calcular();
}
});
textField_3.setColumns(10);

textField_2 = new JTextField();
textField_2.addFocusListener(new FocusAdapter() {
@Override
public void focusLost(FocusEvent e) {
Htvdepth = Double.parseDouble(textField_2.getText());
calcular();
}
});
textField_2.setColumns(10);

textField_5 = new JTextField();
textField_5.addFocusListener(new FocusAdapter() {
@Override
public void focusLost(FocusEvent e) {
Hatd = Double.parseDouble(textField_5.getText());
calcular();
}
});
textField_5.setColumns(10);

JLabel lblM = new JLabel("m");

JLabel lblUnit_3 = new JLabel("m");

JLabel label = new JLabel("Deg (\u00BA)");

JLabel lblHoleDetails = new JLabel("HOLE DETAILS");
lblHoleDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));
GroupLayout gl_panel_1 = new GroupLayout(panel_1);
gl_panel_1.setHorizontalGroup(
gl_panel_1.createParallelGroup(Alignment.LEADING)
.addGroup(gl_panel_1.createSequentialGroup()
.addContainerGap()

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
.addGroup(gl_panel_1.createSequentialGroup()

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
```



```
.addComponent(lblMeasuredDepth_1)
                                .addComponent(lblAngleTd)
                                .addGap(18)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_2, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)

.addComponent(lblUnit_3)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_3, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)
                                .addComponent(lblM)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_5, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)
                                .addComponent(label)))
.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
                                .addComponent(lblHoleDetails)
                                .addComponent(comboBox_1,
GroupLayout.PREFERRED_SIZE, 136, GroupLayout.PREFERRED_SIZE)))
.addContainerGap(17, Short.MAX_VALUE)
);
gl_panel_1.setVerticalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup()
            .addGap(7)
            .addComponent(lblHoleDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblHoleSize)
            .addComponent(comboBox_1,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(ComponentPlacement.UNRELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblMeasuredDepth_1)
            .addComponent(textField_3,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblM))
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblTvDepth_1)
            .addComponent(textField_2,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_3))
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
```

```
.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_5,
        GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(label))
    .addComponent(lblAngleTd)
    .addContainerGap(2, Short.MAX_VALUE))
);
panel_1.setLayout(gl_panel_1);

JLabel lblCasingSize = new JLabel("Casing Size:");
lblCasingSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblCasingDetails = new JLabel("CASING DETAILS");
lblCasingDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

String[] casing={"", "4 1/2'", "5'", "5 1/2'", "6 5/8'", "7'", "7
5/8'", "8 5/8'", "9 5/8'", "10 3/4'", "11 3/4'", "13 3/8'", "16'", "18
5/8'", "20'"};
comboBox = new JComboBox(casing);
comboBox.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int e=comboBox.getSelectedIndex();
        internals = new double[]
{0,4.09,4.56,5.012,6.049,6.538,7.125,8.097,9.063,10.192,11.084,12.715,15.25,17.755,
19.124};

        Csize = internals[e];
        calcular();

    }
});

JLabel lblMeasuredDepth = new JLabel("Measured Depth:");
lblMeasuredDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth = new JLabel("TV Depth:");
lblTvDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleShoe = new JLabel("Angle @ Shoe:");
lblAngleShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField = new JTextField();
textField.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent arg0) {

        Cmdepth = Double.parseDouble(textField.getText());
        calcular();

    }
});

textField.setColumns(10);

textField_1 = new JTextField();
textField_1.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cashoe = Double.parseDouble(textField_1.getText());
        calcular();

    }
});
textField_1.setColumns(10);

textField_4 = new JTextField();
textField_4.addFocusListener(new FocusAdapter() {
    @Override
```

```
        public void focusLost(FocusEvent e) {
            Ctvdepth = Double.parseDouble(textField_4.getText());
            calcular();
        }
    });

    textField_4.setColumns(10);

    JLabel lblUnit = new JLabel("m");

    JLabel lblUnit_1 = new JLabel("Deg (\u00BA)");

    JLabel lblUnit_2 = new JLabel("m");
    lblUnit_2.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
    GroupLayout gl_panel = new GroupLayout(panel);
    gl_panel.setHorizontalGroup(
        gl_panel.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel.createSequentialGroup()

                .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
                    .addGroup(
                        .addGroup(gl_panel.createSequentialGroup()

                            .addGroup(
                                .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
                                    .addComponent(lblCasingSize)
                                    .addComponent(lblMeasuredDepth)
                                    .addComponent(lblTvDepth)
                                    .addComponent(lblAngleShoe))
                                .addGap(18)

                            .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

                                .addGroup(gl_panel.createSequentialGroup()

                                    .addPreferredGap(ComponentPlacement.RELATED)

                                    .addComponent(textField_1, GroupLayout.PREFERRED_SIZE,
                                        GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                    .addGap(18)

                                    .addComponent(lblUnit_1))

                                .addGroup(gl_panel.createSequentialGroup()

                                    .addPreferredGap(ComponentPlacement.RELATED)

                                    .addComponent(textField_4, GroupLayout.PREFERRED_SIZE, 134,
                                        GroupLayout.PREFERRED_SIZE)
                                    .addGap(18)

                                    .addComponent(lblUnit_2))

                                .addGroup(gl_panel.createSequentialGroup()

                                    .addGroup(gl_panel.createParallelGroup(Alignment.TRAILING, false)

                                        .addComponent(comboBox, Alignment.LEADING, 0, GroupLayout.DEFAULT_SIZE,
                                            Short.MAX_VALUE)

                                        .addComponent(textField, Alignment.LEADING)
                                        .addGap(18)

                                        .addComponent(lblUnit)))

                                    .addGroup(gl_panel.createSequentialGroup()

                                        .addGap(109)
                                        .addComponent(lblCasingDetails))
                                    .addContainerGap(50, Short.MAX_VALUE))

                                )
                            )
                        )
                    )
                )
            )
    );
```

```
);
gl_panel.setVerticalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())
            .addContainerGap()
            .addComponent(lblCasingDetails)
            .addGap(3)

        .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblCasingSize)
            .addComponent(comboBox,
 GroupLayout.PREFERRED_SIZE, 33, GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

        .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(textField,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit))
            .addComponent(lblMeasuredDepth))
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
            .addComponent(lblTvDepth)

        .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(textField_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_2))
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
            .addComponent(lblAngleShoe)

        .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(textField_1,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_1))
            .addContainerGap()
);
panel.setLayout(gl_panel);
getContentPane().setLayout(groupLayout);
}

public void calcular()
{
    //1 OH-DC Capacity
    Cap1 = (((Hsize*Hsize)-(DCod*DCod))/(1.9735));
    Cap1c= (Cap1+Cap1b)/2;
    textField_18.setText(""+df2.format(Cap1c));
    //2 OH-DP Capacity
    Cap2 = (((Hsize*Hsize)-(DPod*DPod))/(1.9735));
    textField_20.setText(""+df2.format(Cap2));
    //3 CSG-DP Capacity
    Cap3 = (((Csize*Csize)-(DPod*DPod))/(1.9735));
    textField_22.setText(""+df2.format(Cap3));
    // OH-BHA Capacity
    Cap1b=(((Hsize*Hsize)*(BHA/BHA)-(BHAod*BHAod))/(1.9735));
    //4 Distance top DC to Casing Shoe
    Dist1 = Hmdepth-Cmdepth-DClenght-BHA;
    textField_24.setText(""+df.format(Dist1));
    //5 Fracture Pressure @ shoe
    FracPreS = 0.0981*Ctvdepth*Fgrad;
    textField_27.setText(""+df.format(FracPreS));
    //6 Fracture Pressure @ TD
    FracPreTD = 0.0981*Htvdepth*Ppres;
```

```
textField_26.setText(""+df.format(FracPreTD));
//7 Temperature Gradient
TempGrad = ((Temptd-15)/(Htvdepth))*30;
textField_25.setText(""+df2.format(TempGrad));
//8 OH-DC Annular Volume + OH-BHA Annular Volume
Vol1 = (DClenght*Cap1)/1000+(BHA*Cap1b)/1000;
textField_19.setText(""+df.format(Vol1));
//9 OH-DP Annular Volume
Vol2 = ((Hmdepth-Cmdepth-DClenght)*(Cap2))/1000;
textField_21.setText(""+df.format(Vol2));
//10 CSG-DP Annular Volume
Vol3 = (Cmdepth*Cap3)/1000;
textField_23.setText(""+df.format(Vol3));
//Allowable Influx Height
InfluxH=(Ctvdepth*(Fgrad-Mweight-
((Smargin+Choke)/(0.0981*Ctvdepth)))+Htvdepth*(Mweight-Ppres))/(Mweight-Influx);
textField_28.setText(""+df.format(InfluxH));
//Lenght of Kick @ Shoe
x= Math.cos(Cashoe*Math.PI/180);
LenghtS=InfluxH/(x);
textField_29.setText(""+df.format(LenghtS));
//Lenght of Kick @ TD
y= Math.cos(Hatd*Math.PI/180);
LenghtTD=InfluxH/(y);
textField_30.setText(""+df.format(LenghtTD));

//Kick Size on Shut-in
if(DClenght>LenghtTD)
{
    KickSize = LenghtTD*(Cap1/1000);
}
if(DClenght<LenghtTD)
{
    KickSize = DClenght*Cap1/1000+(LenghtTD-DClenght)*Cap2/1000;
}
txtM.setText(""+df.format(KickSize));

//Kick Size @ Shoe
if(Dist1<LenghtS)
{
    KickSizeS = LenghtTD*(Cap2/1000)+(LenghtS-LenghtTD)*Cap1/1000;
}
if(Dist1>LenghtS)
{
    KickSizeS = LenghtS*Cap2/1000;
}
textField_31.setText(""+df.format(KickSizeS));

//Kick Size back to TD
//Kick Tolerance

if(KickSize>(Vol1+Vol2))
{
    textField_32.setText("N/A");
    textField_34.setText("Kick Fills Entire Open Hole Volume");
    trial=KickSize-(Vol1+Vol2);
    textField_35.setText(""+df.format(trial));
    textField_17.setText("Infinite");
}
if(KickSize<(Vol1+Vol2))
{
    Gas=(Fgrad*Ctvdepth*KickSizeS*(Temptd+273))/((Ppres*Htvdepth)*(Temps+273));

    textField_32.setText(""+df.format(Gas));
```

```
        if(KickSize>Gas)
        {
            KickTol=Gas;
        }
        if(KickSize<Gas)
        {
            KickTol=KickSize;
        }
        textField_17.setText(""+df.format(KickTol));
        MinKick = Double.parseDouble(textField_16.getText());

        if(MinKick>KickTol)
        {
            textField_34.setForeground(Color.RED);
            textField_34.setText("Unacceptable Kick Tolerance");
        }
        if(MinKick<=KickTol)
        {
            textField_34.setForeground(Color.BLUE);
            textField_34.setText("Acceptable Kick Tolerance");
        }
    }

    //MAASP
    MAASP=Ctvdepth*(Fgrad-Mweight)*0.09806-Choke;
    textField_33.setText(""+df.format(MAASP));

    // Influx Density
    InfluxDen=(29*(0.6)*FracPreTD/(0.96*0.000083*(Temptd+273)))/1000000;
    textField_34.setForeground(Color.BLUE);
    textField_9.setText(""+df2.format(InfluxDen));
}
}
```

F.3 Section1_US.java

```
package kick.views;

import javax.swing.JInternalFrame;
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JPanel;
import javax.swing.JLabel;
import java.awt.Font;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import java.awt.Color;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import java.awt.event.FocusAdapter;
import java.awt.event.FocusEvent;
import java.text.DecimalFormat;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Section1_US extends JInternalFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    public JTextField textField;
    private JTextField textField_1;
```

```
private JTextField textField_2;
private JTextField textField_3;
private JTextField textField_4;
private JTextField textField_5;
private JTextField textField_6;
private JTextField textField_7;
private JTextField textField_8;
private JTextField textField_9;
private JTextField textField_10;
private JTextField textField_11;
private JTextField textField_12;
private JTextField textField_13;
private JTextField textField_14;
private JTextField textField_15;
private JTextField textField_16;
private JTextField textField_17;
double Csize, Csize2, Cmdepth, Ctvdepth, Cashoe;
double Hmdepth, Htvdepth, Hatd;
double Hsize, Hsize2;
double BHA, BHAod, DClenght, DCod, DPod;
double Mweight, Influx, Ppres, Fgrad, Temps, Temptd;
double Choke, Smargin;
double MinKick, KickTol;
double Cap1, Cap1b, Cap2, Cap3;
double Dist1, FracPreS, FracPreTD, TempGrad;
double Vol1, Vol2, Vol3;
double InfluxH, LenghtS, LenghtTD, KickSize, KickSizeS, Gas, MAASP;

double x, y;

private JComboBox comboBox;
private JComboBox comboBox_2;
private JComboBox comboBox_3;
private JComboBox comboBox_4;
private JComboBox comboBox_1;
double internals[];
double HoleSize[];
double BHASize[];
double DCSize[];
double DPSize[];
private DecimalFormat df;
private JTextField textField_18;
private JTextField textField_19;
private JTextField textField_20;
private JTextField textField_21;
private JTextField textField_22;
private JTextField textField_23;
private JTextField textField_24;
private JTextField textField_25;
private JTextField textField_26;
private JTextField textField_27;
private JTextField textField_28;
private JTextField textField_29;
private JTextField textField_30;
private JTextField txtM;
private JTextField textField_31;
private JTextField textField_32;
private JTextField textField_33;
private JTextField textField_34;

/**
 * Create the frame.
 */
public Section1_US() {
    setTitle("Section Analysis - Kick Tolerance");
    setIconifiable(true);
```

```
setClosable(true);
setBounds(0, 0, 1250, 600);

df = new DecimalFormat("#.##");

JPanel panel = new JPanel();

JPanel panel_1 = new JPanel();

JPanel panel_2 = new JPanel();

JPanel panel_3 = new JPanel();

JPanel panel_4 = new JPanel();

JPanel panel_5 = new JPanel();

JPanel panel_6 = new JPanel();
GroupLayout groupLayout = new GroupLayout(getContentPane());
groupLayout.setHorizontalGroup(
    groupLayout.createParallelGroup(Alignment.LEADING)
        .addGroup(groupLayout.createSequentialGroup()
            .addContainerGap()

            .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                .addComponent(panel_5, 0, 0,
Short.MAX_VALUE)

                .addGroup(groupLayout.createSequentialGroup()

                    .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                        .addComponent(panel_4,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                        .addComponent(panel_2, 0, 0,
Short.MAX_VALUE)
                        .addComponent(panel,
GroupLayout.DEFAULT_SIZE, 342, Short.MAX_VALUE))
                    .addPreferredGap(ComponentPlacement.RELATED)

                    .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                        .addComponent(panel_1,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                        .addComponent(panel_3,
GroupLayout.DEFAULT_SIZE, 360, Short.MAX_VALUE)))
                .addPreferredGap(ComponentPlacement.RELATED, 88,
Short.MAX_VALUE)
                .addComponent(panel_6, GroupLayout.PREFERRED_SIZE,
449, GroupLayout.PREFERRED_SIZE)
                .addContainerGap()
            );
groupLayout.setVerticalGroup(
    groupLayout.createParallelGroup(Alignment.LEADING)
        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
            .addComponent(panel_6,
GroupLayout.DEFAULT_SIZE, 555, Short.MAX_VALUE)

            .addGroup(groupLayout.createSequentialGroup()

                .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
                    .addComponent(panel,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
```


[illegible]

```
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,}});  
  
JLabel lblCapacity = new JLabel("Capacity");  
lblCapacity.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(lblCapacity, "3, 2");  
  
JLabel lblAnnular = new JLabel("Annular");  
lblAnnular.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(lblAnnular, "7, 2");  
  
JLabel lblVolume = new JLabel("Volume");  
lblVolume.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(lblVolume, "7, 4");  
  
JLabel lblOpenHole = new JLabel("Open Hole - Drill Collar");  
panel_6.add(lblOpenHole, "1, 6, left, default");  
  
textField_18 = new JTextField();  
panel_6.add(textField_18, "2, 6, 2, 1, fill, default");  
textField_18.setColumns(10);  
  
JLabel lblBblft = new JLabel("gal/ft");  
panel_6.add(lblBblft, "4, 6");  
  
textField_19 = new JTextField();  
panel_6.add(textField_19, "6, 6, 2, 1, fill, default");  
textField_19.setColumns(10);  
  
JLabel lblBbl = new JLabel("bbl");  
panel_6.add(lblBbl, "9, 6");  
  
JLabel lblOpenHole_1 = new JLabel("Open Hole - Drill Pipe");  
panel_6.add(lblOpenHole_1, "1, 8, left, default");  
  
textField_20 = new JTextField();  
panel_6.add(textField_20, "2, 8, 2, 1, fill, default");  
textField_20.setColumns(10);  
  
JLabel lblBblft_1 = new JLabel("gal/ft");  
panel_6.add(lblBblft_1, "4, 8");  
  
textField_21 = new JTextField();  
panel_6.add(textField_21, "6, 8, 2, 1, fill, default");  
textField_21.setColumns(10);  
  
JLabel lblBbl_1 = new JLabel("bbl");  
panel_6.add(lblBbl_1, "9, 8");  
  
JLabel lblCasingDrill = new JLabel("Casing - Drill Pipe");  
panel_6.add(lblCasingDrill, "1, 10, left, default");  
  
textField_22 = new JTextField();  
panel_6.add(textField_22, "2, 10, 2, 1, fill, default");  
textField_22.setColumns(10);  
  
JLabel lblBblft_2 = new JLabel("gal/ft");
```

```
panel_6.add(lblBblft_2, "4, 10");

textField_23 = new JTextField();
panel_6.add(textField_23, "6, 10, 2, 1, fill, default");
textField_23.setColumns(10);

JLabel lblBbl_2 = new JLabel("bbl");
panel_6.add(lblBbl_2, "9, 10, default, center");

JLabel lblDistanceTopDrill = new JLabel("Distance top Drill Collar to
Casing Shoe");
panel_6.add(lblDistanceTopDrill, "1, 12, 4, 1");

textField_24 = new JTextField();
panel_6.add(textField_24, "5, 12, 3, 1, fill, default");
textField_24.setColumns(10);

JLabel lblM_1 = new JLabel("ft");
panel_6.add(lblM_1, "9, 12");

JLabel lblNewLabel_1 = new JLabel("Temperature Gradient");
panel_6.add(lblNewLabel_1, "1, 14");

textField_25 = new JTextField();
panel_6.add(textField_25, "5, 14, 3, 1, fill, default");
textField_25.setColumns(10);

JLabel lblcm = new JLabel("\u00BAF/100ft");
panel_6.add(lblcm, "9, 14");

JLabel lblCasingShoe = new JLabel("Fracture Pressure @ Casing Shoe");
panel_6.add(lblCasingShoe, "1, 16, left, default");

textField_27 = new JTextField();
panel_6.add(textField_27, "5, 16, 3, 1, fill, default");
textField_27.setColumns(10);

JLabel lblNewLabel_3 = new JLabel("psi");
panel_6.add(lblNewLabel_3, "9, 16, left, default");

JLabel lblTotalDepth = new JLabel("Fracture Gradient @ Total Depth");
panel_6.add(lblTotalDepth, "1, 18");

textField_26 = new JTextField();
panel_6.add(textField_26, "5, 18, 3, 1, fill, default");
textField_26.setColumns(10);

JLabel lblNewLabel_2 = new JLabel("psi");
panel_6.add(lblNewLabel_2, "9, 18, default, bottom");

JLabel lblAllo = new JLabel("Allowable Influx Height");
panel_6.add(lblAllo, "1, 20");

textField_28 = new JTextField();
panel_6.add(textField_28, "5, 20, 3, 1, fill, default");
textField_28.setColumns(10);

JLabel lblBar = new JLabel("ft TVD");
panel_6.add(lblBar, "9, 20");

JLabel lblNewLabel_4 = new JLabel("Lenght of Kick @ Casing Shoe");
panel_6.add(lblNewLabel_4, "1, 22");

textField_29 = new JTextField();
panel_6.add(textField_29, "5, 22, 3, 1, fill, default");
textField_29.setColumns(10);
```

```
JLabel lblM_2 = new JLabel("ft MD");
panel_6.add(lblM_2, "9, 22");

JLabel lblLenghtOfKick = new JLabel("Lenght of Kick @ True Depth");
panel_6.add(lblLenghtOfKick, "1, 24");

textField_30 = new JTextField();
panel_6.add(textField_30, "5, 24, 3, 1, fill, default");
textField_30.setColumns(10);

JLabel lblM_3 = new JLabel("ft MD");
panel_6.add(lblM_3, "9, 24");

JLabel lblShutIn = new JLabel("Kick Size on Shut in");
panel_6.add(lblShutIn, "1, 26");

txtM = new JTextField();
panel_6.add(txtM, "5, 26, 3, 1, fill, default");
txtM.setColumns(10);

JLabel lblNewLabel_5 = new JLabel("bbl");
panel_6.add(lblNewLabel_5, "9, 26");

JLabel lblKickSize = new JLabel("Kick Size @ Shoe");
panel_6.add(lblKickSize, "1, 28");

textField_31 = new JTextField();
panel_6.add(textField_31, "5, 28, 3, 1, fill, default");
textField_31.setColumns(10);

JLabel lblNewLabel_6 = new JLabel("bbl");
panel_6.add(lblNewLabel_6, "9, 28");

JLabel lblGas = new JLabel("Gas - Shoe Back to Total Depth");
panel_6.add(lblGas, "1, 30");

textField_32 = new JTextField();
panel_6.add(textField_32, "5, 30, 3, 1, fill, default");
textField_32.setColumns(10);

JLabel lblNewLabel_7 = new JLabel("bbl");
panel_6.add(lblNewLabel_7, "9, 30");

JLabel lblMaasp = new JLabel("MAASP");
panel_6.add(lblMaasp, "1, 32");

textField_33 = new JTextField();
panel_6.add(textField_33, "5, 32, 3, 1, fill, default");
textField_33.setColumns(10);

JLabel lblBar_1 = new JLabel("psi");
panel_6.add(lblBar_1, "9, 32");

textField_34 = new JTextField();
textField_34.setFont(new Font("Lucida Grande", Font.BOLD, 14));
panel_6.add(textField_34, "1, 34, 9, 1, fill, default");
textField_34.setColumns(10);

JLabel lblNewLabel = new JLabel("Kick Tolerance");
lblNewLabel.setForeground(Color.RED);
lblNewLabel.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMinKickTolerance = new JLabel("Kick Tolerance:");
lblMinKickTolerance.setForeground(Color.RED);
lblMinKickTolerance.setFont(new Font("Lucida Grande", Font.BOLD, 14));

textField_16 = new JTextField();
```

```
textField_16.setForeground(Color.RED);
textField_16.setFont(new Font("Lucida Grande", Font.BOLD, 13));
textField_16.setColumns(10);

JLabel lblUnit_12 = new JLabel("bbl");
lblUnit_12.setFont(new Font("Lucida Grande", Font.BOLD, 14));
lblUnit_12.setForeground(Color.RED);

JLabel lblCalculatedKickTolerance = new JLabel("Calculated Kick
Tolerance:");
lblCalculatedKickTolerance.setForeground(Color.RED);
lblCalculatedKickTolerance.setFont(new Font("Lucida Grande",
Font.BOLD, 14));

textField_17 = new JTextField();
textField_17.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_17.setForeground(Color.RED);
textField_17.setColumns(10);

JLabel lblUnit_13 = new JLabel("bbl");
lblUnit_13.setForeground(Color.RED);
lblUnit_13.setFont(new Font("Lucida Grande", Font.BOLD, 14));

JLabel lblSuggested = new JLabel("Suggested");
lblSuggested.setForeground(Color.RED);
lblSuggested.setFont(new Font("Lucida Grande", Font.BOLD, 14));
GroupLayout gl_panel_5 = new GroupLayout(panel_5);
gl_panel_5.setHorizontalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup())

.addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup()
        .addContainerGap()
        .addComponent(lblMinKickTolerance))
    .addGroup(gl_panel_5.createSequentialGroup()
        .addGap(22)
        .addComponent(lblSuggested)))

.addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup()

.addPreferredGap(ComponentPlacement.RELATED)
    .addComponent(textField_16,
GroupLayout.PREFERRED_SIZE, 111, GroupLayout.PREFERRED_SIZE)

.addPreferredGap(ComponentPlacement.RELATED)
    .addComponent(lblUnit_12)

.addPreferredGap(ComponentPlacement.RELATED, 77, Short.MAX_VALUE)

.addComponent(lblCalculatedKickTolerance)

.addPreferredGap(ComponentPlacement.RELATED)
    .addComponent(textField_17,
GroupLayout.PREFERRED_SIZE, 110, GroupLayout.PREFERRED_SIZE)
    .addGap(18)
    .addComponent(lblUnit_13))
    .addGroup(gl_panel_5.createSequentialGroup()
        .addGap(160)
        .addComponent(lblNewLabel)))
    .addContainerGap()
);
gl_panel_5.setVerticalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
```

```
.addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_5.createSequentialGroup()
        .addContainerGap()
        .addComponent(lblNewLabel)
        .addGap(5)

    .addGroup(gl_panel_5.createParallelGroup(Alignment.BASELINE)

    .addComponent(lblMinKickTolerance)

        .addComponent(lblUnit_12)
        .addComponent(textField_16,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_13)
        .addComponent(textField_17,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

    .addComponent(lblCalculatedKickTolerance)))
    .addGroup(gl_panel_5.createSequentialGroup()
        .addGap(25)
        .addComponent(lblSuggested))
    .addContainerGap(12, Short.MAX_VALUE))
);
panel_5.setLayout(gl_panel_5);

JLabel lblSafetyDetails = new JLabel("SAFETY DETAILS");
lblSafetyDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblChokeLoss = new JLabel("Choke Loss:");
lblChokeLoss.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_14 = new JTextField();
textField_14.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Choke = Double.parseDouble(textField_14.getText());
        calcular();
    }
});
textField_14.setColumns(10);

JLabel lblSafetyMargin = new JLabel("Safety Margin:");
lblSafetyMargin.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_15 = new JTextField();
textField_15.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Smargin = Double.parseDouble(textField_15.getText());
        calcular();
    }
});
textField_15.setColumns(10);

JLabel lblUnit_10 = new JLabel("psi");

JLabel lblUnit_11 = new JLabel("psi");
GroupLayout gl_panel_4 = new GroupLayout(panel_4);
gl_panel_4.setHorizontalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addGap(112)
            .addComponent(lblSafetyDetails))
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()
```

```
.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblChokeLoss)
    .addComponent(lblSafetyMargin))
    .addGap(40)

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING, false)
        .addComponent(textField_15, 0,
0, Short.MAX_VALUE)
        .addComponent(textField_14,
 GroupLayout.DEFAULT_SIZE, 126, Short.MAX_VALUE))
        .addGap(18)

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addComponent(lblUnit_11)
        .addComponent(lblUnit_10)))
        .addContainerGap(29, GroupLayout.PREFERRED_SIZE))
);
gl_panel_4.setVerticalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblSafetyDetails)
            .addPreferredGap(ComponentPlacement.RELATED)
        )
    .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblChokeLoss)
        .addComponent(textField_14,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_10))
        .addPreferredGap(ComponentPlacement.RELATED)
    .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblSafetyMargin)
        .addComponent(textField_15,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_11))
        .addContainerGap(67, Short.MAX_VALUE)
    );
panel_4.setLayout(gl_panel_4);

JLabel lblPressureDetails = new JLabel("PRESSURE DETAILS");
lblPressureDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMudWeight = new JLabel("Mud Weight:");
lblMudWeight.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblInfluxDensity = new JLabel("Influx Density:");
lblInfluxDensity.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblPorePressure = new JLabel("Pore Pressure @ TD:");
lblPorePressure.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblFractureGradient = new JLabel("Fracture Gradient @ Shoe:");
lblFractureGradient.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblTemperatureShoe = new JLabel("Temperature @ Shoe:");
lblTemperatureShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTemperatureTd = new JLabel("Temperature @ TD:");
lblTemperatureTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_8 = new JTextField();
textField_8.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
```

```
Mweight = Double.parseDouble(textField_8.getText());
    calcular();
}
});
textField_8.setColumns(10);

textField_9 = new JTextField();
textField_9.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Influx = Double.parseDouble(textField_9.getText());
        calcular();
    }
});
textField_9.setColumns(10);

textField_10 = new JTextField();
textField_10.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ppres = Double.parseDouble(textField_10.getText());
        calcular();
    }
});
textField_10.setColumns(10);

textField_11 = new JTextField();
textField_11.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Fgrad = Double.parseDouble(textField_11.getText());
        calcular();
    }
});
textField_11.setColumns(10);

textField_12 = new JTextField();
textField_12.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temps = Double.parseDouble(textField_12.getText());
        calcular();
    }
});
textField_12.setColumns(10);

textField_13 = new JTextField();
textField_13.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temptd = Double.parseDouble(textField_13.getText());
        calcular();
    }
});
textField_13.setColumns(10);

JLabel lblUnit_6 = new JLabel("ppg");

JLabel lblUnit_7 = new JLabel("ppg");

JLabel lblUnit_8 = new JLabel("EMW -ppg");

JLabel lblUnit_9 = new JLabel("EMW -ppg");

JLabel lblunit = new JLabel("\u00BAF");

JLabel lblunit_1 = new JLabel("\u00BAF");
```



```
        GroupLayout gl_panel_3 = new GroupLayout(panel_3);
        gl_panel_3.setHorizontalGroup(
            gl_panel_3.createParallelGroup(Alignment.LEADING)
                .addGroup(gl_panel_3.createSequentialGroup()
                    .addContainerGap()

                .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
                    .addGroup(gl_panel_3.createSequentialGroup()
                        .addComponent(lblMudWeight)
                        .addGap(45)

                .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

                .addComponent(lblPressureDetails)

                .addGroup(gl_panel_3.createSequentialGroup()

                    .addGap(6)

                .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

                .addComponent(textField_9, GroupLayout.PREFERRED_SIZE,
                    GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

                .addComponent(textField_8, GroupLayout.PREFERRED_SIZE,
                    GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

                .addComponent(textField_10, GroupLayout.PREFERRED_SIZE,
                    GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

                .addComponent(textField_11, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
                    88, GroupLayout.PREFERRED_SIZE)

                .addComponent(textField_12, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
                    116, GroupLayout.PREFERRED_SIZE))

                    .addGap(18)

                .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

                .addComponent(lblUnit_9)

                .addComponent(lblunit)

                .addComponent(lblUnit_8)

                .addComponent(lblUnit_7)

                .addComponent(lblUnit_6))))

                .addComponent(lblInfluxDensity)
                .addComponent(lblPorePressure)
                .addComponent(lblFractureGradient)
                .addComponent(lblTemperatureShoe)
                .addGroup(gl_panel_3.createSequentialGroup()
                    .addComponent(lblTemperatureTd)

                .addPreferredGap(ComponentPlacement.RELATED)
                    .addComponent(textField_13,
                        GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                    .addGap(18)
                    .addComponent(lblunit_1)))

                .addGap(0)
        );
        gl_panel_3.setVerticalGroup(
            gl_panel_3.createParallelGroup(Alignment.LEADING)
                .addGroup(gl_panel_3.createSequentialGroup()
                    .addContainerGap()
                    .addComponent(lblPressureDetails)
                    .addPreferredGap(ComponentPlacement.UNRELATED)
```

```

        .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblMudWeight)
            .addComponent(textField_8,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_6))
        .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblInfluxDensity)
            .addComponent(textField_9,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_7))
        .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblPorePressure)
            .addComponent(textField_10,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_8))
        .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblFractureGradient)
            .addComponent(textField_11,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_9))
        .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblTemperatureShoe)
            .addComponent(textField_12,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblunit))
        .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblTemperatureTd)
            .addComponent(textField_13,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblunit_1))
        .addContainerGap(65, Short.MAX_VALUE))
    );
    panel_3.setLayout(gl_panel_3);

    JLabel lblBhaLenght = new JLabel("BHA Lenght");
    lblBhaLenght.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblStringDetails = new JLabel("STRING DETAILS");
    lblStringDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

    JLabel lblOd = new JLabel("BHA OD:");
    lblOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblDrillCollarLenght = new JLabel("Drill Collar Lenght:");
    lblDrillCollarLenght.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

    JLabel lblOd_1 = new JLabel("Drill Collar OD:");
    lblOd_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblDrillPipeOd = new JLabel("Drill Pipe OD:");
    lblDrillPipeOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    textField_6 = new JTextField();
    textField_6.addFocusListener(new FocusAdapter() {
        @Override

```

```
        public void focusLost(FocusEvent e) {
            BHA = Double.parseDouble(textField_6.getText());
            calcular();
        }
    });
    textField_6.setColumns(10);

    String[] BHACombo={"", "9 1/2'", "8'", "6 1/2'", "4 3/4'", "3 1/2'"};
    comboBox_2 = new JComboBox(BHACombo);
    comboBox_2.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent arg0) {
            int a= comboBox_2.getSelectedIndex();
            BHASize= new double[] {0,9.5,8,6.5,4.75,3.5};
            BHAod= BHASize[a];
            calcular();
        }
    });

    textField_7 = new JTextField();
    textField_7.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            DClenght = Double.parseDouble(textField_7.getText());
            calcular();
        }
    });
    textField_7.setColumns(10);

    String[] Collar={"", "9 1/2'", "8 1/4'", "8'", "7 1/4'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6'", "5'", "4 3/4'", "4 1/8'", "3 1/2'", "3 1/8'"};
    comboBox_3 = new JComboBox(Collar);
    comboBox_3.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
            int b= comboBox_3.getSelectedIndex();
            DCSize= new double[] {0,9.5,8.25,8,7.25,7,6.75,6.5,6.25,6,5,4.75,4.125,3.5,3.125};
            DCod= DCSize[b];
            calcular();
        }
    });

    String[] Pipe={"", "6 5/8'", "5 1/2'", "5'", "4 1/2'", "4'", "3 1/2'", "2 7/8'", "2 3/8'"};
    comboBox_4 = new JComboBox(Pipe);
    comboBox_4.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
            int c= comboBox_4.getSelectedIndex();
            DPSize= new double[] {0,6.625,5.5,5,4.5,4,3.5,2.875,2.375};
            DPod= DPSize[c];
            calcular();
        }
    });

    JLabel lblUnit_4 = new JLabel("ft");

    JLabel lblUnit_5 = new JLabel("ft");
    lblUnit_5.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
    GroupLayout gl_panel_2 = new GroupLayout(panel_2);
    gl_panel_2.setHorizontalGroup(
        gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_2.createSequentialGroup())

        .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_2.createSequentialGroup())
```

```
.addGap(116)
.addComponent(lblStringDetails))
.addGroup(gl_panel_2.createSequentialGroup())
.addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
    .addComponent(lblBhaLenght)
    .addComponent(lblOd))
.addGap(55)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
    .addComponent(comboBox_2, 0,
 GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
    .addComponent(textField_6))
.addGap(18)
.addComponent(lblUnit_4))
.addGroup(gl_panel_2.createSequentialGroup())
.addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)

.addComponent(lblDrillCollarLenght)

.addComponent(lblOd_1)
.addComponent(lblDrillPipeOd))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
    .addComponent(comboBox_4, 0,
 GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
    .addComponent(comboBox_3, 0,
 GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
    .addComponent(textField_7))
.addGap(18)
.addComponent(lblUnit_5))
.addContainerGap(81, Short.MAX_VALUE))
);
gl_panel_2.setVerticalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblStringDetails)
            .addGap(5)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblBhaLenght)
    .addComponent(textField_6,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_4))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblOd)
    .addComponent(comboBox_2,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblDrillCollarLenght)
    .addComponent(textField_7,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_5))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblOd_1)
    .addComponent(comboBox_3,
```

```
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addComponent(comboBox_4,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblDrillPipeOd))
    .addContainerGap(GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
    );
    panel_2.setLayout(gl_panel_2);

    JLabel lblHoleSize = new JLabel("Hole Size:");
    lblHoleSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblMeasuredDepth_1 = new JLabel("Measured Depth:");
    lblMeasuredDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblTvDepth_1 = new JLabel("TV Depth:");
    lblTvDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblAngleTd = new JLabel("Angle @ TD:");
    lblAngleTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    String[] Hole={"", "36'", "33'", "32 3/8'", "32
1/4'", "32'", "31'", "28'", "26'", "24'", "23 1/2'", "23'", "22'", "21
3/4'", "20'", "19 1/4'", "18 1/2'", "18 1/8'", "17 1/2'", "17'", "16'", "15
1/2'", "15'", "14 3/4'", "14 1/2'", "13 3/4'", "13 1/2'", "12 1/4'", "12'", "11
5/8'", "10 5/8'", "9 7/8'", "9 1/2'", "8 3/4'", "8 5/8'", "8 1/2'", "8 3/8'", "7
7/8'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6 1/8'", "6'", "5 7/8'", "5 5/8'", "5
1/2'", "5'", "4 7/8'", "4 3/4'", "4 5/8'", "4 1/2'", "4 1/8'", "3 7/8'", "3
3/4'"};

    comboBox_1 = new JComboBox(Hole);
    comboBox_1.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
            int d= comboBox_1.getSelectedIndex();
            HoleSize= new double[]
{0.0,36,33,32.375,32.25,32,31,28,26,24,23.5,23,22,21.75,20,19.25,18.5,18.125,17.5,1
7,16,15.5,15,14.75,14.5,13.75,13.5,12.25,12,11.625,10.625,9.875,9.5,8.75,8.625,8.5,
8.375,7.875,7,6.75,6.5,6.25,6.125,6,5.875,5.625,5.5,5,4.875,4.75,4.625,4.5,4.125,3.
875,3.75};

            Hsize= HoleSize[d];
            if (Hsize>12.25)
            {
                textField_16.setText("50.0");
            }
            if (Hsize<=12.25)
            {
                textField_16.setText("25.0");
            }
            calcular();
        }
    });

    textField_3 = new JTextField();
    textField_3.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            Hmdepth = Double.parseDouble(textField_3.getText());
            calcular();
        }
    });
    textField_3.setColumns(10);

    textField_2 = new JTextField();
    textField_2.addFocusListener(new FocusAdapter() {
```

```
@Override
public void focusLost(FocusEvent e) {
    Htvdepth = Double.parseDouble(textField_2.getText());
    calcular();
}
});
textField_2.setColumns(10);

textField_5 = new JTextField();
textField_5.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Hatd = Double.parseDouble(textField_5.getText());
        calcular();
    }
});
textField_5.setColumns(10);

JLabel lblM = new JLabel("ft");

JLabel lblUnit_3 = new JLabel("ft");

JLabel label = new JLabel("Deg (\u00BA)");

JLabel lblHoleDetails = new JLabel("HOLE DETAILS");
lblHoleDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));
GroupLayout gl_panel_1 = new GroupLayout(panel_1);
gl_panel_1.setHorizontalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup())
        .addContainerGap()

    .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup())

    .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

    .addComponent(lblMeasuredDepth_1)
        .addComponent(lblAngleTd)
        .addGap(18)

    .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

    .addGroup(gl_panel_1.createSequentialGroup())

    .addComponent(textField_2, GroupLayout.PREFERRED_SIZE,
        GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18)

    .addComponent(lblUnit_3)

    .addGroup(gl_panel_1.createSequentialGroup())

    .addComponent(textField_3, GroupLayout.PREFERRED_SIZE,
        GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18)
        .addComponent(lblM)

    .addGroup(gl_panel_1.createSequentialGroup())

    .addComponent(textField_5, GroupLayout.PREFERRED_SIZE,
        GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18)
        .addComponent(label))))
    .addComponent(lblTvDepth_1)
    .addGroup(gl_panel_1.createSequentialGroup())
        .addComponent(lblHoleSize)
```

```
.addGap(65)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
    .addComponent(lblHoleDetails)
    .addComponent(comboBox_1,
 GroupLayout.PREFERRED_SIZE, 136, GroupLayout.PREFERRED_SIZE)))
    .addContainerGap(17, Short.MAX_VALUE))
);
gl_panel_1.setVerticalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup()
            .addGap(7)
            .addComponent(lblHoleDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblHoleSize)
            .addComponent(comboBox_1,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(ComponentPlacement.UNRELATED)

        .addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblMeasuredDepth_1)
            .addComponent(textField_3,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblM))
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblTvDepth_1)
            .addComponent(textField_2,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_3))
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

        .addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(textField_5,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(label))
            .addComponent(lblAngleTd)
            .addContainerGap(2, Short.MAX_VALUE))
);
panel_1.setLayout(gl_panel_1);

JLabel lblCasingSize = new JLabel("Casing Size:");
lblCasingSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblCasingDetails = new JLabel("CASING DETAILS");
lblCasingDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

String[] casing={"", "4 1/2'", "5'", "5 1/2'", "6 5/8'", "7'", "7 5/8'", "8 5/8'", "9 5/8'", "10 3/4'", "11 3/4'", "13 3/8'", "16'", "18 5/8'", "20'"};
comboBox = new JComboBox(casing);
comboBox.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int e=comboBox.getSelectedIndex();
        internals = new double[]
{0,4.09,4.56,5.012,6.049,6.538,7.125,8.097,9.063,10.192,11.084,12.715,15.25,17.755,19.124};

        Csize = internals[e];
        calcular();
    }
});
```

```
});

JLabel lblMeasuredDepth = new JLabel("Measured Depth:");
lblMeasuredDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth = new JLabel("TV Depth:");
lblTvDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleShoe = new JLabel("Angle @ Shoe:");
lblAngleShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField = new JTextField();
textField.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent arg0) {

        Cmdepth = Double.parseDouble(textField.getText());
        calcular();
    }
});

textField.setColumns(10);

textField_1 = new JTextField();
textField_1.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cashoe = Double.parseDouble(textField_1.getText());
        calcular();
    }
});
textField_1.setColumns(10);

textField_4 = new JTextField();
textField_4.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ctvdepth = Double.parseDouble(textField_4.getText());
        calcular();
    }
});

textField_4.setColumns(10);

JLabel lblUnit = new JLabel("ft");

JLabel lblUnit_1 = new JLabel("Deg (\u00BA)");

JLabel lblUnit_2 = new JLabel("ft");
lblUnit_2.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel = new GroupLayout(panel);
gl_panel.setHorizontalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel.createSequentialGroup())
        .addContainerGap()

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblCasingSize)
    .addComponent(lblMeasuredDepth)
    .addComponent(lblTvDepth)
    .addComponent(lblAngleShoe))
        .addGap(18)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
```



```
.addGroup(gl_panel.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_1, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)

.addComponent(lblUnit_1))

.addGroup(gl_panel.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_4, GroupLayout.PREFERRED_SIZE, 134,
GroupLayout.PREFERRED_SIZE)
                                .addGap(18)

.addComponent(lblUnit_2))

.addGroup(gl_panel.createSequentialGroup())

.addGroup(gl_panel.createParallelGroup(Alignment.TRAILING, false)

.addComponent(comboBox, Alignment.LEADING, 0, GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

.addComponent(textField, Alignment.LEADING)
                                .addGap(18)

.addComponent(lblUnit)))

                                .addGroup(gl_panel.createSequentialGroup())
                                    .addGap(109)
                                    .addComponent(lblCasingDetails))
                                .addContainerGap(50, Short.MAX_VALUE)
);
gl_panel.setVerticalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblCasingDetails)
            .addGap(3)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblCasingSize)
            .addComponent(comboBox,
GroupLayout.PREFERRED_SIZE, 33, GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(textField,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit))
            .addComponent(lblMeasuredDepth))
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
            .addComponent(lblTvDepth)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
            .addComponent(textField_4,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_2))
            .addPreferredGap(ComponentPlacement.RELATED)
```

```
.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblAngleShoe)

    .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
        .addComponent(textField_1,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_1)))
    .addContainerGap()
);
panel.setLayout(gl_panel);
getContentPane().setLayout(groupLayout);
}

public void calcular()
{
    //1 OH-DC Capacity
    Cap1 = (((Hsize*Hsize)-(DCod*DCod))/(1.9735))*0.08052;
    textField_18.setText(""+df.format(Cap1));
    //2 OH-DP Capacity
    Cap2 = (((Hsize*Hsize)-(DPod*DPod))/(1.9735))*0.08052;
    textField_20.setText(""+df.format(Cap2));
    //3 CSG-DP Capacity
    Cap3 = (((Csize*Csize)-(DPod*DPod))/(1.9735))*0.08052;
    textField_22.setText(""+df.format(Cap3));
    //4 Distance top DC to Casing Shoe
    Dist1 = (Hmdepth-Cmdepth-DClenght);
    textField_24.setText(""+df.format(Dist1));
    //5 Fracture Pressure @ shoe
    FracPreS = ((Ctvdepth/3.28)*(Fgrad/8.33)*0.0981)*14.5;
    textField_27.setText(""+df.format(FracPreS));
    //6 Fracture Pressure @ TD
    FracPreTD = ((Htvdepth/3.28)*(Ppres/8.33)*0.0981)*14.5;
    textField_26.setText(""+df.format(FracPreTD));
    //7 Temperature Gradient
    TempGrad = (((TempTD-Temps)/(Htvdepth-Ctvdepth))*30)*1.8)+32;
    textField_25.setText(""+df.format(TempGrad));
    //8 OH-DC Annular Volume
    Vol1 = (DClenght*Cap1)*0.0238;
    textField_19.setText(""+df.format(Vol1));
    //9 OH-DP Annular Volume
    Vol2 = ((Hmdepth-Cmdepth-DClenght)*(Cap2))*0.0238;
    textField_21.setText(""+df.format(Vol2));
    //10 CSG-DP Annular Volume
    Vol3 = (Cmdepth*Cap3)*0.0238;
    textField_23.setText(""+df.format(Vol3));
    //Allowable Influx Height
    InfluxH=((Ctvdepth/3.28*(Fgrad/8.33-Mweight/8.33-
        (((Smargin+Choke)/14.5)/(0.0981*(Ctvdepth/3.28))))+(Htvdepth/3.28*(Mweight/8.33-
        Ppres/8.33)))/(Mweight/8.33-Influx/8.33))*3.28;
    textField_28.setText(""+df.format(InfluxH));
    //Lenght of Kick @ TD
    x= Math.cos(Cashoe*Math.PI/180);
    LenghtTD=InfluxH/(x);
    textField_29.setText(""+df.format(LenghtTD));
    //Lenght of Kick @ Shoe
    y= Math.cos(Hatd*Math.PI/180);
    LenghtS=InfluxH/(y);
    textField_30.setText(""+df.format(LenghtS));

    //Kick Size on Shut-in
    if(DClenght>LenghtTD)
    {
        KickSize = (LenghtTD/3.28*(Cap1/0.08052/1000))*6.2998;
    }
    if(DClenght<LenghtTD)
    {

```

```
KickSize = (DClength/3.28*Cap1/0.08052/1000+(LenghtTD-
DClength)/3.28*Cap2/0.08052/1000)*6.2998;
}
txtM.setText(""+df.format(KickSize));

//Kick Size @ Shoe
if(Dist1<LenghtS)
{
    KickSizeS = (LenghtTD/3.28*(Cap2/0.08052/1000)+(LenghtS-
LenghtTD)/3.28*Cap1/0.08052/1000)*6.2998;
}
if(Dist1>LenghtS)
{
    KickSizeS = (LenghtS/3.28*Cap2/0.08052/1000)*6.2998;
}
textField_31.setText(""+df.format(KickSizeS));

//Kick Size back to TD

if(KickSize>(Vol1+Vol2))
{
    textField_32.setText("N/A");
}
if(KickSize<(Vol1+Vol2))
{
    Gas=(Fgrad/8.33*Ctvdepth/3.28*KickSizeS/6.2998*((Temptd-
32)*(5/9))+273))/((Ppres/8.33*Htvdepth/3.28*((Temps-32)*(5/9))+273))*6.3;

    textField_32.setText(""+df.format(Gas));
}

//MAASP
MAASP=(Ctvdepth/3.28*(Fgrad-Mweight)/8.33*0.09806-Choke/14.5)*14.5;
textField_33.setText(""+df.format(MAASP));

//Kick Tolerance

if(KickSize>Gas)
{
    KickTol=Gas;
}
if(KickSize<Gas)
{
    KickTol=KickSize;
}
textField_17.setText(""+df.format(KickTol));
MinKick = Double.parseDouble(textField_16.getText());

if(MinKick>KickTol)
{
    textField_34.setForeground(Color.RED);
    textField_34.setText("Unacceptable Kick Tolerance");
}
if(MinKick<=KickTol)
{
    textField_34.setForeground(Color.BLUE);
    textField_34.setText("Acceptable Kick Tolerance");
}
}
```

F.4 Section2.java

```
package kick.views;

import javax.swing.JInternalFrame;
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JPanel;
import javax.swing.JLabel;
import java.awt.Font;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import java.awt.Color;
import java.awt.event.FocusAdapter;
import java.awt.event.FocusEvent;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Section2 extends JInternalFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JTextField textField;
    private JTextField textField_1;
    private JTextField textField_2;
    private JTextField textField_3;
    private JTextField textField_4;
    private JTextField textField_5;
    private JTextField textField_6;
    private JTextField textField_7;
    private JTextField textField_8;
    private JTextField textField_9;
    private JTextField textField_10;
    private JTextField textField_11;
    private JTextField textField_12;
    private JTextField textField_13;
    private JTextField textField_14;
    private JTextField textField_15;
    private JTextField textField_16;
    private JTextField textField_17;
    double Csize,Cmdepth,Ctvdepth,Cashoe;
    double Hsize,Hmdepth,Htvdepth,Hatd;
    double BHA,BHAod,DClenght,DCod,DPod;
    double MinKick,Influx,Ppres,Fgrad,Temps,Temptd;
    double Choke,Smargin;
    double Minmud,Maxmud;
    double Cap1,Cap2,Cap3;
    double Dist1,FracPreS,FracPreTD,TempGrad;
    double Vol1,Vol2,Vol3;

    private JComboBox comboBox;
    private JComboBox comboBox_2;
    private JComboBox comboBox_3;
    private JComboBox comboBox_4;
    private JComboBox comboBox_1;
    double internals[];
    double HoleSize[];
    double BHASize[];
    double DCSIZE[];
    double DPSIZE[];
    private JTextField textField_18;
    private JTextField textField_19;
    private JTextField textField_20;
```

```
private JTextField textField_21;
private JTextField textField_22;
private JTextField textField_23;
private JTextField textField_24;
private JTextField textField_25;
private JTextField textField_26;
private JTextField textField_27;
private JTextField textField_28;
private JTextField textField_29;
private JTextField textField_30;
private JTextField textField_31;
private JTextField textField_32;
private JTextField textField_33;
private JTextField textField_34;
private JTextField textField_35;

/**
 * Create the frame.
 */
public Section2() {
    setTitle("Section Analysis - Mud Weight");
    setIconifiable(true);
    setClosable(true);
    setBounds(0, 0, 1250, 600);

    JPanel panel = new JPanel();

    JPanel panel_1 = new JPanel();

    JPanel panel_2 = new JPanel();

    JPanel panel_3 = new JPanel();

    JPanel panel_4 = new JPanel();

    JPanel panel_5 = new JPanel();

    JPanel panel_6 = new JPanel();
    GroupLayout groupLayout = new GroupLayout(getContentPane());
    groupLayout.setHorizontalGroup(
        groupLayout.createParallelGroup(Alignment.LEADING)
            .addGroup(groupLayout.createSequentialGroup()
                .addContainerGap()

            .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                .addComponent(panel_5, 0, 0,
Short.MAX_VALUE)

            .addGroup(groupLayout.createSequentialGroup()

            .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                .addComponent(panel_4,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                .addComponent(panel_2, 0, 0,
Short.MAX_VALUE)
                .addComponent(panel,
GroupLayout.DEFAULT_SIZE, 344, Short.MAX_VALUE))

            .addPreferredGap(ComponentPlacement.RELATED)

            .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
                .addComponent(panel_3,
GroupLayout.PREFERRED_SIZE, 352, Short.MAX_VALUE)
                .addComponent(panel_1,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)))
        .addPreferredGap(ComponentPlacement.RELATED, 56,
```

```
Short.MAX_VALUE)
    .addComponent(panel_6, GroupLayout.PREFERRED_SIZE,
456, GroupLayout.PREFERRED_SIZE)
    .addContainerGap()
);
groupLayout.setVerticalGroup(
    groupLayout.createParallelGroup(Alignment.LEADING)
        .addGroup(Alignment.TRAILING,
groupLayout.createSequentialGroup()
        .addContainerGap()

    .addGroup(groupLayout.createParallelGroup(Alignment.TRAILING)
        .addComponent(panel_6, Alignment.LEADING,
GroupLayout.DEFAULT_SIZE, 543, Short.MAX_VALUE)

    .addGroup(groupLayout.createSequentialGroup()

    .addGroup(groupLayout.createSequentialGroup()
        .addComponent(panel_1,
GroupLayout.PREFERRED_SIZE, 170, Short.MAX_VALUE)
        .addComponent(panel,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
        .addGap(6)

    .addGroup(groupLayout.createSequentialGroup()

    .addGroup(groupLayout.createSequentialGroup()
        .addComponent(panel_2,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

    .addPreferredGap(ComponentPlacement.RELATED)
        .addComponent(panel_4,
GroupLayout.PREFERRED_SIZE, 97, GroupLayout.PREFERRED_SIZE))
        .addComponent(panel_3,
GroupLayout.DEFAULT_SIZE, 301, Short.MAX_VALUE))

    .addPreferredGap(ComponentPlacement.RELATED)
        .addComponent(panel_5,
GroupLayout.PREFERRED_SIZE, 66, GroupLayout.PREFERRED_SIZE))
        .addContainerGap()
);
panel_6.setLayout(new FormLayout(new ColumnSpec[] {
    FormFactory.RELATED_GAP_COLSPEC,
    ColumnSpec.decode("default:grow"),
    FormFactory.RELATED_GAP_COLSPEC,
    ColumnSpec.decode("default:grow"),
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    ColumnSpec.decode("default:grow"),
    ColumnSpec.decode("default:grow"),
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    ColumnSpec.decode("default:grow"),
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    ColumnSpec.decode("default:grow"),
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
    FormFactory.DEFAULT_COLSPEC,
    FormFactory.RELATED_GAP_COLSPEC,
```

[illegible]

```
JLabel label_1 = new JLabel("Capacity");
label_1.setFont(new Font("Lucida Grande", Font.BOLD, 13));
panel_6.add(label_1, "4, 2");

JLabel label_19 = new JLabel("Annular");
label_19.setFont(new Font("Lucida Grande", Font.BOLD, 13));
panel_6.add(label_19, "9, 2");

JLabel label_20 = new JLabel("Volume");
label_20.setFont(new Font("Lucida Grande", Font.BOLD, 13));
panel_6.add(label_20, "9, 4");

JLabel label_4 = new JLabel("Open Hole - Drill Collar");
panel_6.add(label_4, "2, 6, left, default");

textField_19 = new JTextField();
textField_19.setColumns(10);
panel_6.add(textField_19, "3, 6, 2, 1, fill, default");

JLabel label_16 = new JLabel("l/m");
panel_6.add(label_16, "6, 6, right, default");

textField_22 = new JTextField();
textField_22.setColumns(10);
panel_6.add(textField_22, "8, 6, 2, 1, fill, default");

JLabel label_21 = new JLabel("m^3");
panel_6.add(label_21, "11, 6");

JLabel label_2 = new JLabel("Open Hole - Drill Pipe");
panel_6.add(label_2, "2, 8, left, default");

textField_20 = new JTextField();
textField_20.setColumns(10);
panel_6.add(textField_20, "3, 8, 2, 1, fill, default");

JLabel label_17 = new JLabel("l/m");
panel_6.add(label_17, "6, 8, right, default");

textField_23 = new JTextField();
textField_23.setColumns(10);
panel_6.add(textField_23, "8, 8, 2, 1, fill, default");

JLabel label_22 = new JLabel("m^3");
panel_6.add(label_22, "11, 8");

JLabel label_3 = new JLabel("Casing - Drill Pipe");
panel_6.add(label_3, "2, 10, left, default");

textField_21 = new JTextField();
textField_21.setColumns(10);
panel_6.add(textField_21, "3, 10, 2, 1, fill, default");

JLabel label_18 = new JLabel("l/m");
panel_6.add(label_18, "6, 10, right, default");

textField_24 = new JTextField();
textField_24.setColumns(10);
panel_6.add(textField_24, "8, 10, 2, 1, fill, default");

JLabel label_23 = new JLabel("m^3");
panel_6.add(label_23, "11, 10");

JLabel label_5 = new JLabel("Distance top Drill Collar to Casing
Shoe");
panel_6.add(label_5, "2, 12, 3, 1");
```



```
textField_25 = new JTextField();
textField_25.setColumns(10);
panel_6.add(textField_25, "7, 12, 3, 1, fill, default");

JLabel label_24 = new JLabel("m");
panel_6.add(label_24, "11, 12");

JLabel label_6 = new JLabel("Temperature Gradient");
panel_6.add(label_6, "2, 14");

textField_26 = new JTextField();
panel_6.add(textField_26, "7, 14, 3, 1, fill, default");
textField_26.setColumns(10);

JLabel label_25 = new JLabel("\u00BAC/30m");
panel_6.add(label_25, "11, 14");

JLabel label_7 = new JLabel("Fracture Pressure @ Casing Shoe");
panel_6.add(label_7, "2, 16");

textField_27 = new JTextField();
panel_6.add(textField_27, "7, 16, 3, 1, fill, default");
textField_27.setColumns(10);

JLabel label_26 = new JLabel("bar");
panel_6.add(label_26, "11, 16");

JLabel label_8 = new JLabel("Fracture Gradient @ Total Depth");
panel_6.add(label_8, "2, 18");

textField_28 = new JTextField();
panel_6.add(textField_28, "7, 18, 3, 1, fill, default");
textField_28.setColumns(10);

JLabel label_27 = new JLabel("bar");
panel_6.add(label_27, "11, 18");

JLabel label_9 = new JLabel("Allowable Influx Height");
panel_6.add(label_9, "2, 20");

textField_29 = new JTextField();
panel_6.add(textField_29, "7, 20, 3, 1, fill, default");
textField_29.setColumns(10);

JLabel label_29 = new JLabel("m TVD");
panel_6.add(label_29, "11, 20");

JLabel label_10 = new JLabel("Lenght of Kick @ Casing Shoe");
panel_6.add(label_10, "2, 22");

textField_30 = new JTextField();
panel_6.add(textField_30, "7, 22, 3, 1, fill, default");
textField_30.setColumns(10);

JLabel label_30 = new JLabel("m MD");
panel_6.add(label_30, "11, 22");

JLabel label_11 = new JLabel("Lenght of Kick @ True Depth");
panel_6.add(label_11, "2, 24");

textField_31 = new JTextField();
panel_6.add(textField_31, "7, 24, 3, 1, fill, default");
textField_31.setColumns(10);

JLabel label_31 = new JLabel("m MD");
panel_6.add(label_31, "11, 24");
```

```
JLabel label_12 = new JLabel("Kick Size on Shut in");
panel_6.add(label_12, "2, 26");

textField_32 = new JTextField();
panel_6.add(textField_32, "7, 26, 3, 1, fill, default");
textField_32.setColumns(10);

JLabel label_32 = new JLabel("m^3");
panel_6.add(label_32, "11, 26");

JLabel label_13 = new JLabel("Kick Size @ Shoe");
panel_6.add(label_13, "2, 28");

textField_33 = new JTextField();
panel_6.add(textField_33, "7, 28, 3, 1, fill, default");
textField_33.setColumns(10);

JLabel label_33 = new JLabel("m^3");
panel_6.add(label_33, "11, 28");

JLabel label_14 = new JLabel("Gas - Shoe Back to Total Depth");
panel_6.add(label_14, "2, 30");

textField_34 = new JTextField();
panel_6.add(textField_34, "7, 30, 3, 1, fill, default");
textField_34.setColumns(10);

JLabel label_34 = new JLabel("m^3");
panel_6.add(label_34, "11, 30");

JLabel label_15 = new JLabel("MAASP");
panel_6.add(label_15, "2, 32");

textField_35 = new JTextField();
panel_6.add(textField_35, "7, 32, 3, 1, fill, default");
textField_35.setColumns(10);

JLabel label_28 = new JLabel("bar");
panel_6.add(label_28, "11, 32");

textField_18 = new JTextField();
textField_18.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_18.setColumns(10);
panel_6.add(textField_18, "2, 34, 9, 1, fill, default");

JLabel lblNewLabel = new JLabel("Mud Weight");
lblNewLabel.setForeground(Color.RED);
lblNewLabel.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMinKickTolerance = new JLabel("Min. Mud Weight:");
lblMinKickTolerance.setForeground(Color.RED);
lblMinKickTolerance.setFont(new Font("Lucida Grande", Font.BOLD, 14));

textField_16 = new JTextField();
textField_16.setColumns(10);

JLabel lblUnit_12 = new JLabel("SG");
lblUnit_12.setFont(new Font("Lucida Grande", Font.BOLD, 13));
lblUnit_12.setForeground(new Color(255, 0, 0));

JLabel lblCalculatedKickTolerance = new JLabel("Max. Mud Weight:");
lblCalculatedKickTolerance.setForeground(Color.RED);
lblCalculatedKickTolerance.setFont(new Font("Lucida Grande",
Font.BOLD, 14));

textField_17 = new JTextField();
textField_17.setFont(new Font("Lucida Grande", Font.BOLD, 14));
```

```
textField_17.setForeground(Color.RED);
textField_17.setColumns(10);

JLabel lblUnit_13 = new JLabel("SG");
lblUnit_13.setForeground(Color.RED);
lblUnit_13.setFont(new Font("Lucida Grande", Font.BOLD, 13));
GroupLayout gl_panel_5 = new GroupLayout(panel_5);
gl_panel_5.setHorizontalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblMinKickTolerance)
            .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(textField_16,
                GroupLayout.PREFERRED_SIZE, GroupLayout.PREFERRED_SIZE)
            .addGap(18)
            .addComponent(lblUnit_12)
            .addPreferredGap(ComponentPlacement.RELATED, 92,
                Short.MAX_VALUE)
            .addComponent(lblCalculatedKickTolerance)
            .addPreferredGap(ComponentPlacement.UNRELATED)
            .addComponent(textField_17,
                GroupLayout.PREFERRED_SIZE, GroupLayout.PREFERRED_SIZE)
            .addGap(18)
            .addComponent(lblUnit_13)
            .addGap(43)
            .addGroup(gl_panel_5.createSequentialGroup()
                .addGap(322)
                .addComponent(lblNewLabel)
                .addContainerGap(302, Short.MAX_VALUE)
            )
        );
gl_panel_5.setVerticalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblNewLabel)
            .addGap(5)

            .addGroup(gl_panel_5.createParallelGroup(Alignment.BASELINE)
                .addComponent(lblMinKickTolerance)
                .addComponent(textField_16,
                    GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_12)
                .addComponent(lblUnit_13)
                .addComponent(textField_17,
                    GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblCalculatedKickTolerance)
                .addContainerGap(12, Short.MAX_VALUE)
            )
        );
panel_5.setLayout(gl_panel_5);

JLabel lblSafetyDetails = new JLabel("SAFETY DETAILS");
lblSafetyDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblChokeLoss = new JLabel("Choke Loss:");
lblChokeLoss.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_14 = new JTextField();
textField_14.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Choke = Double.parseDouble(textField_14.getText());
    }
});
textField_14.setColumns(10);

JLabel lblSafetyMargin = new JLabel("Safety Margin:");
```

```
lblSafetyMargin.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_15 = new JTextField();
textField_15.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Smargin = Double.parseDouble(textField_15.getText());
    }
});
textField_15.setColumns(10);

JLabel lblUnit_10 = new JLabel("bar");

JLabel lblUnit_11 = new JLabel("bar");
GroupLayout gl_panel_4 = new GroupLayout(panel_4);
gl_panel_4.setHorizontalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup())

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup())
            .addGap(112)
            .addComponent(lblSafetyDetails)
            .addGroup(gl_panel_4.createSequentialGroup())
                .addContainerGap()

        .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
            .addComponent(lblChokeLoss)
            .addComponent(lblSafetyMargin)
            .addGap(40)

        .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING, false)
            .addComponent(textField_15, 0,
                0, Short.MAX_VALUE)
            .addComponent(textField_14,
                GroupLayout.DEFAULT_SIZE, 126, Short.MAX_VALUE)
            .addGap(18)

        .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
            .addComponent(lblUnit_11)
            .addComponent(lblUnit_10)))
        .addContainerGap(29, GroupLayout.PREFERRED_SIZE)
);
gl_panel_4.setVerticalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup())
            .addContainerGap()
            .addComponent(lblSafetyDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblChokeLoss)
            .addComponent(textField_14,
                GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_10)
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblSafetyMargin)
            .addComponent(textField_15,
                GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_11)
            .addContainerGap(67, Short.MAX_VALUE)
);
panel_4.setLayout(gl_panel_4);

JLabel lblPressureDetails = new JLabel("PRESSURE DETAILS");
```

```
lblPressureDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMudWeight = new JLabel("Min. Kick Tolerance:");
lblMudWeight.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblInfluxDensity = new JLabel("Influx Density:");
lblInfluxDensity.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblPorePressure = new JLabel("Pore Pressure @ TD:");
lblPorePressure.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblFractureGradient = new JLabel("Fracture Gradient @ Shoe:");
lblFractureGradient.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblTemperatureShoe = new JLabel("Temperature @ Shoe:");
lblTemperatureShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTemperatureTd = new JLabel("Temperature @ TD:");
lblTemperatureTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_8 = new JTextField();
textField_8.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        MinKick = Double.parseDouble(textField_8.getText());
    }
});
textField_8.setColumns(10);

textField_9 = new JTextField();
textField_9.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Influx = Double.parseDouble(textField_9.getText());
    }
});
textField_9.setColumns(10);

textField_10 = new JTextField();
textField_10.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ppres = Double.parseDouble(textField_10.getText());
    }
});
textField_10.setColumns(10);

textField_11 = new JTextField();
textField_11.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Fgrad = Double.parseDouble(textField_11.getText());
    }
});
textField_11.setColumns(10);

textField_12 = new JTextField();
textField_12.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temps = Double.parseDouble(textField_12.getText());
    }
});
textField_12.setColumns(10);

textField_13 = new JTextField();
```

```
textField_13.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temptd = Double.parseDouble(textField_13.getText());
    }
});
textField_13.setColumns(10);

JLabel lblUnit_6 = new JLabel("m3");

JLabel lblUnit_7 = new JLabel("SG");

JLabel lblUnit_8 = new JLabel("EMW -SG");

JLabel lblUnit_9 = new JLabel("EMW -SG");

JLabel lblunit = new JLabel("\u00BAC");

JLabel lblunit_1 = new JLabel("\u00BAC");
GroupLayout gl_panel_3 = new GroupLayout(panel_3);
gl_panel_3.setHorizontalGroup(
    gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup())

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup())
        .addContainerGap()

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING, false)

.addGroup(gl_panel_3.createSequentialGroup())

.addComponent(lblTemperatureTd)

.addPreferredGap(ComponentPlacement.UNRELATED)

.addComponent(textField_13, 0, 0, Short.MAX_VALUE)
        .addGap(22)
        .addComponent(lblunit_1)
        .addGap(40))

.addGroup(gl_panel_3.createSequentialGroup())

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_3.createSequentialGroup())

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(lblMudWeight)

.addComponent(lblInfluxDensity)

.addComponent(lblPorePressure))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING, false)

.addComponent(textField_10, 0, 0, Short.MAX_VALUE)

.addComponent(textField_9, 0, 0, Short.MAX_VALUE)

.addComponent(textField_8, GroupLayout.DEFAULT_SIZE, 124, Short.MAX_VALUE)))

.addGroup(gl_panel_3.createSequentialGroup())
```

```
.addComponent(lblFractureGradient)

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_11, GroupLayout.PREFERRED_SIZE, 81,
GroupLayout.PREFERRED_SIZE)

.addGroup(gl_panel_3.createSequentialGroup())

.addComponent(lblTemperatureShoe)

.addPreferredGap(ComponentPlacement.UNRELATED)

.addComponent(textField_12, GroupLayout.PREFERRED_SIZE, 106,
GroupLayout.PREFERRED_SIZE))

.addGap(18)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(lblUnit_7)

.addComponent(lblUnit_6)

.addComponent(lblUnit_8)

.addComponent(lblUnit_9)

.addComponent(lblunit))))

.addGroup(gl_panel_3.createSequentialGroup())
.addGap(107)
.addComponent(lblPressureDetails))
.addGap(34)
);
gl_panel_3.setVerticalGroup(
gl_panel_3.createParallelGroup(Alignment.LEADING)
.addGroup(gl_panel_3.createSequentialGroup())
.addContainerGap()
.addComponent(lblPressureDetails)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
.addGroup(gl_panel_3.createSequentialGroup())
.addGap(12)
.addComponent(lblMudWeight))
.addGroup(gl_panel_3.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(textField_8,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_6)))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblInfluxDensity)
.addComponent(textField_9,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_7))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblPorePressure)
.addComponent(textField_10,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_8))
.addPreferredGap(ComponentPlacement.RELATED)
```

```
.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblFractureGradient)
    .addComponent(textField_11,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_9))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblTemperatureShoe)
    .addComponent(textField_12,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblunit))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblTemperatureTd)
    .addComponent(textField_13,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblunit_1))
    .addContainerGap(71, Short.MAX_VALUE)
);
panel_3.setLayout(gl_panel_3);

JLabel lblBhaLenght = new JLabel("BHA Lenght");
lblBhaLenght.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblStringDetails = new JLabel("STRING DETAILS");
lblStringDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblOd = new JLabel("BHA OD:");
lblOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillCollarLenght = new JLabel("Drill Collar Lenght:");
lblDrillCollarLenght.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblOd_1 = new JLabel("Drill Collar OD:");
lblOd_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillPipeOd = new JLabel("Drill Pipe OD:");
lblDrillPipeOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_6 = new JTextField();
textField_6.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        BHA = Double.parseDouble(textField_6.getText());
    }
});
textField_6.setColumns(10);

String[] BHACombo={"", "9 1/2'", "8'", "6 1/2'", "4 3/4'", "3 1/2'"};
comboBox_2 = new JComboBox(BHACombo);
comboBox_2.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int a= comboBox_2.getSelectedIndex();
        BHASize= new double[] {0,9.5,8,6.5,4.75,3.5};
        BHAod= BHASize[a];

    }
});

textField_7 = new JTextField();
textField_7.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
```



```
        DClenght = Double.parseDouble(textField_7.getText());
    }
});
textField_7.setColumns(10);

String[] Collar={"", "9 1/2'", "8 1/4'", "8'", "7 1/4'", "7'", "6
3/4'", "6 1/2'", "6 1/4'", "6'", "5'", "4 3/4'", "4 1/8'", "3 1/2'", "3 1/8'"};
comboBox_3 = new JComboBox(Collar);
comboBox_3.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int b= comboBox_3.getSelectedIndex();
        DCSize= new double[]
{0,9.5,8.25,8,7.25,7,6.75,6.5,6.25,6,5,4.75,4.125,3.5,3.125};
        DCod= DCSize[b];
    }
});

String[] Pipe={"", "6 5/8'", "5 1/2'", "5'", "4 1/2'", "4'", "3
1/2'", "2 7/8'", "2 3/8'"};
comboBox_4 = new JComboBox(Pipe);
comboBox_4.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {

        int c= comboBox_4.getSelectedIndex();
        DPSize= new double[]
{0,6.625,5.5,5,4.5,4,3.5,2.875,2.375};
        DPod= DPSize[c];
    }
});

JLabel lblUnit_4 = new JLabel("m");

JLabel lblUnit_5 = new JLabel("m");
lblUnit_5.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel_2 = new GroupLayout(panel_2);
gl_panel_2.setHorizontalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_2.createSequentialGroup()
                .addGap(116)
                .addComponent(lblStringDetails))
            .addGroup(gl_panel_2.createSequentialGroup()
                .addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addComponent(lblBhaLenght)
            .addComponent(lblOd)
            .addGap(55)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
            .addComponent(comboBox_2, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(textField_6))
            .addGap(18)
            .addComponent(lblUnit_4))
            .addGroup(gl_panel_2.createSequentialGroup()
                .addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)

.addComponent(lblDrillCollarLenght)

.addComponent(lblOd_1)
```

```
.addComponent(lblDrillPipeOd))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
    .addComponent(comboBox_4, 0,
 GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
    .addComponent(comboBox_3, 0,
 GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
    .addComponent(textField_7))
.addGap(18)
.addComponent(lblUnit_5)))
.addContainerGap(81, Short.MAX_VALUE))
);
gl_panel_2.setVerticalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblStringDetails)
            .addGap(5)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblBhaLenght)
    .addComponent(textField_6,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_4))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblOd)
    .addComponent(comboBox_2,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblDrillCollarLenght)
    .addComponent(textField_7,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_5))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblOd_1)
    .addComponent(comboBox_3,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
    .addComponent(comboBox_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblDrillPipeOd))
.addContainerGap(GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
);
panel_2.setLayout(gl_panel_2);

JLabel lblHoleSize = new JLabel("Hole Size:");
lblHoleSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblMeasuredDepth_1 = new JLabel("Measured Depth:");
lblMeasuredDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth_1 = new JLabel("TV Depth:");
lblTvDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleTd = new JLabel("Angle @ TD:");
lblAngleTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
```

```
String[] Hole={"", "36'", "33'", "32 3/8'", "32  
1/4'", "32'", "31'", "28'", "26'", "24'", "23 1/2'", "23'", "22'", "21  
3/4'", "20'", "19 1/4'", "18 1/2'", "18 1/8'", "17 1/2'", "17'", "16'", "15  
1/2'", "15'", "14 3/4'", "14 1/2'", "13 3/4'", "13 1/2'", "12 1/4'", "12'", "11  
5/8'", "10 5/8'", "9 7/8'", "9 1/2'", "8 3/4'", "8 5/8'", "8 1/2'", "8 3/8'", "7  
7/8'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6 1/8'", "6'", "5 7/8'", "5 5/8'", "5  
1/2'", "5'", "4 7/8'", "4 3/4'", "4 5/8'", "4 1/2'", "4 1/8'", "3 7/8'", "3  
3/4'"};  
  
comboBox_1 = new JComboBox(Hole);  
comboBox_1.addActionListener(new ActionListener() {  
    public void actionPerformed(ActionEvent e) {  
        int d= comboBox_1.getSelectedIndex();  
        HoleSize= new double[]  
{0.0, 36, 33, 32.375, 32.25, 32, 31, 28, 26, 24, 23.5, 23, 22, 21.75, 20, 19.25, 18.5, 18.125, 17.5, 1  
7, 16, 15.5, 15, 14.75, 14.5, 13.75, 13.5, 12.25, 12, 11.625, 10.625, 9.875, 9.5, 8.75, 8.625, 8.5,  
8.375, 7.875, 7, 6.75, 6.5, 6.25, 6.125, 6, 5.875, 5.625, 5.5, 5, 4.875, 4.75, 4.625, 4.5, 4.125, 3.  
875, 3.75};  
  
        Hsize= HoleSize[d];  
  
    }  
});  
  
textField_3 = new JTextField();  
textField_3.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Hmdepth = Double.parseDouble(textField_3.getText());  
    }  
});  
textField_3.setColumns(10);  
  
textField_2 = new JTextField();  
textField_2.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Hmdepth = Double.parseDouble(textField_2.getText());  
    }  
});  
textField_2.setColumns(10);  
  
textField_5 = new JTextField();  
textField_5.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Hatd = Double.parseDouble(textField_5.getText());  
    }  
});  
textField_5.setColumns(10);  
  
JLabel lblM = new JLabel("m");  
  
JLabel lblUnit_3 = new JLabel("m");  
  
JLabel label = new JLabel("Deg (\u00BA)");  
  
JLabel lblHoleDetails = new JLabel("HOLE DETAILS");  
lblHoleDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));  
GroupLayout gl_panel_1 = new GroupLayout(panel_1);  
gl_panel_1.setHorizontalGroup(  
    gl_panel_1.createParallelGroup(Alignment.LEADING)  
        .addGroup(gl_panel_1.createSequentialGroup()  
            .addContainerGap()  
  
        .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)  
            .addGroup(gl_panel_1.createSequentialGroup()
```

```
.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addComponent(lblMeasuredDepth_1)
                                .addComponent(lblAngleTd)
                                .addGap(18)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_2, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)

.addComponent(lblUnit_3))

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_3, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)
                                .addComponent(lblM)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_5, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)
                                .addComponent(label)))
                                .addComponent(lblTvDepth_1)
                                .addGroup(gl_panel_1.createSequentialGroup())
                                    .addComponent(lblHoleSize)
                                    .addGap(65)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
                                .addComponent(lblHoleDetails)
                                .addComponent(comboBox_1,
GroupLayout.PREFERRED_SIZE, 136, GroupLayout.PREFERRED_SIZE)))
                                .addContainerGap(17, Short.MAX_VALUE))
);
gl_panel_1.setVerticalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup())
            .addGap(7)
            .addComponent(lblHoleDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblHoleSize)
            .addComponent(comboBox_1,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(ComponentPlacement.UNRELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblMeasuredDepth_1)
            .addComponent(textField_3,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblM))
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblTvDepth_1)
            .addComponent(textField_2,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_3))
            .addPreferredGap(ComponentPlacement.RELATED)
```

```
.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_5,
        GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(label))
    .addComponent(lblAngleTd))
    .addContainerGap(2, Short.MAX_VALUE))
);
panel_1.setLayout(gl_panel_1);

JLabel lblCasingSize = new JLabel("Casing Size:");
lblCasingSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblCasingDetails = new JLabel("CASING DETAILS");
lblCasingDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

String[] casing={"", "4 1/2'", "5'", "5 1/2'", "6 5/8'", "7'", "7
5/8'", "8 5/8'", "9 5/8'", "10 3/4'", "11 3/4'", "13 3/8'", "16'", "18
5/8'", "20'"};
comboBox = new JComboBox(casing);
comboBox.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int e=comboBox.getSelectedIndex();
        internals = new double[]
{0,4.09,4.56,5.012,6.049,6.538,7.125,8.097,9.063,10.192,11.084,12.715,15.25,17.755,
19.124};

        Csize = internals[e];

    }
});

JLabel lblMeasuredDepth = new JLabel("Measured Depth:");
lblMeasuredDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth = new JLabel("TV Depth:");
lblTvDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleShoe = new JLabel("Angle @ Shoe:");
lblAngleShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField = new JTextField();
textField.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cmdepth = Double.parseDouble(textField.getText());
    }
});
textField.setColumns(10);

textField_1 = new JTextField();
textField_1.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cashoe = Double.parseDouble(textField_1.getText());
    }
});
textField_1.setColumns(10);

textField_4 = new JTextField();
textField_4.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ctvdepth = Double.parseDouble(textField_4.getText());
    }
})
```

```
});
textField_4.setColumns(10);

JLabel lblUnit = new JLabel("m");

JLabel lblUnit_1 = new JLabel("Deg (\u00BA)");

JLabel lblUnit_2 = new JLabel("m");
lblUnit_2.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GridLayout gl_panel = new GridLayout(panel);
gl_panel.setHorizontalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel.createSequentialGroup())
        .addContainerGap()

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblCasingSize)
    .addComponent(lblMeasuredDepth)
    .addComponent(lblTvDepth)
    .addComponent(lblAngleShoe))
        .addGap(18)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_1, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18)

.addComponent(lblUnit_1))

.addGroup(gl_panel.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_4, GroupLayout.PREFERRED_SIZE, 134,
GroupLayout.PREFERRED_SIZE)
        .addGap(18)

.addComponent(lblUnit_2))

.addGroup(gl_panel.createSequentialGroup())

.addGroup(gl_panel.createParallelGroup(Alignment.TRAILING, false)

.addComponent(comboBox, Alignment.LEADING, 0, GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

.addComponent(textField, Alignment.LEADING)
        .addGap(18)

.addComponent(lblUnit)))

        .addGroup(gl_panel.createSequentialGroup())
            .addGap(109)
            .addComponent(lblCasingDetails))
        .addContainerGap(50, Short.MAX_VALUE)
);
gl_panel.setVerticalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())
            .addContainerGap()
```

```
.addComponent(lblCasingDetails)
.addGap(3)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblCasingSize)
    .addComponent(comboBox,
 GroupLayout.PREFERRED_SIZE, 33, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit))
    .addComponent(lblMeasuredDepth))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblTvDepth)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_2))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblAngleShoe)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_1,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_1))
.addContainerGap()
);
panel.setLayout(gl_panel);
getContentPane().setLayout(groupLayout);

//1 OH-DC Capacity
Cap1 = (((Hsize*Hsize)-(DCod*DCod))/(1.9735));
//2 OH-DP Capacity
Cap2 = (((Hsize*Hsize)-(DPod*DPod))/(1.9735));
//3 CSG-DP Capacity
Cap3 = (((Csize*Csize)-(DPod*DPod))/(1.9735));
//4 Distance top DC to Casing Shoe
Dist1 = Hmdepth-Cmdepth-DClenght;
//5 Fracture Pressure @ shoe
FracPreS = 0.0981*Ctvdepth*Fgrad;
//6 Fracture Pressure @ TD
FracPreTD = 0.0981*Htvdepth*Ppres;
//7 Temperature Gradient
TempGrad = ((Temptd-Temps)/(Htvdepth-Ctvdepth));
//8 OH-DC Annular Volume
Vol1 = (DClenght*Cap1)/1000;
//9 OH-DP Annular Volume
Vol2 = ((Hmdepth-Cmdepth-DClenght)*(Cap2))/1000;
//10 CSG-DP Annular Volume
Vol3 = (Cmdepth*Cap3)/1000;
}
}
```

F.5 Section2_US.java

```
package kick.views;

import javax.swing.JInternalFrame;
```

```
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JPanel;
import javax.swing.JLabel;
import java.awt.Font;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import java.awt.Color;
import java.awt.event.FocusAdapter;
import java.awt.event.FocusEvent;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Section2_US extends JFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JTextField textField;
    private JTextField textField_1;
    private JTextField textField_2;
    private JTextField textField_3;
    private JTextField textField_4;
    private JTextField textField_5;
    private JTextField textField_6;
    private JTextField textField_7;
    private JTextField textField_8;
    private JTextField textField_9;
    private JTextField textField_10;
    private JTextField textField_11;
    private JTextField textField_12;
    private JTextField textField_13;
    private JTextField textField_14;
    private JTextField textField_15;
    private JTextField textField_16;
    private JTextField textField_17;
    double Csize, Cmdepth, Ctvdepth, Cashoe;
    double Hsize, Hmdepth, Htvdepth, Hatd;
    double BHA, BHAd, DClenght, DCod, DPod;
    double MinKick, Influx, Ppres, Fgrad, Temps, Temptd;
    double Choke, Smargin;
    double Minmud, Maxmud;
    double Cap1, Cap2, Cap3;
    double Dist1, FracPreS, FracPreTD, TempGrad;
    double Vol1, Vol2, Vol3;

    private JComboBox comboBox;
    private JComboBox comboBox_2;
    private JComboBox comboBox_3;
    private JComboBox comboBox_4;
    private JComboBox comboBox_1;
    double internals[];
    double HoleSize[];
    double BHASize[];
    double DCSize[];
    double DPSize[];
    private JTextField textField_18;
    private JTextField textField_19;
    private JTextField textField_20;
    private JTextField textField_21;
    private JTextField textField_22;
```



```
private JTextField textField_23;
private JTextField textField_24;
private JTextField textField_25;
private JTextField textField_26;
private JTextField textField_27;
private JTextField textField_28;
private JTextField textField_29;
private JTextField textField_30;
private JTextField textField_31;
private JTextField textField_32;
private JTextField textField_33;
private JTextField textField_34;
private JTextField textField_35;

/**
 * Create the frame.
 */
public Section2_US() {
    setTitle("Section Analysis - Mud Weight");
    setIconifiable(true);
    setClosable(true);
    setBounds(0, 0, 1250, 600);

    JPanel panel = new JPanel();

    JPanel panel_1 = new JPanel();

    JPanel panel_2 = new JPanel();

    JPanel panel_3 = new JPanel();

    JPanel panel_4 = new JPanel();

    JPanel panel_5 = new JPanel();

    JPanel panel_6 = new JPanel();
    GroupLayout groupLayout = new GroupLayout(getContentPane());
    groupLayout.setHorizontalGroup(
        groupLayout.createParallelGroup(Alignment.LEADING)
            .addGroup(groupLayout.createSequentialGroup()
                .addContainerGap()

                .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                    .addComponent(panel_5, 0, 0,
Short.MAX_VALUE)

                    .addGroup(groupLayout.createSequentialGroup()

                        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                            .addComponent(panel_4,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                            .addComponent(panel_2, 0, 0,
Short.MAX_VALUE)

                            .addComponent(panel,
GroupLayout.DEFAULT_SIZE, 344, Short.MAX_VALUE))

                        .addPreferredGap(ComponentPlacement.RELATED)

                        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
                            .addComponent(panel_3,
GroupLayout.PREFERRED_SIZE, 360, GroupLayout.PREFERRED_SIZE)
                            .addComponent(panel_1,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)))
                            .addPreferredGap(ComponentPlacement.RELATED, 48,
Short.MAX_VALUE)

                            .addComponent(panel_6, GroupLayout.PREFERRED_SIZE,
```

```
456, GroupLayout.PREFERRED_SIZE)
        .addContainerGap()
    );
    groupLayout.setVerticalGroup(
        GroupLayout.createParallelGroup(Alignment.TRAILING)
            .addGroup(groupLayout.createSequentialGroup()
                .addContainerGap()

                .addGroup(groupLayout.createParallelGroup(Alignment.TRAILING)
                    .addComponent(panel_6, Alignment.LEADING,
                        GroupLayout.DEFAULT_SIZE, 549, Short.MAX_VALUE)

                    .addGroup(groupLayout.createSequentialGroup())

                    .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
                        .addComponent(panel_1,
                            GroupLayout.PREFERRED_SIZE, 170, Short.MAX_VALUE)
                        .addComponent(panel,
                            GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                    .addGap(6)

                    .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)

                    .addGroup(groupLayout.createSequentialGroup()
                        .addComponent(panel_2,
                            GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                        .addPreferredGap(ComponentPlacement.RELATED)
                        .addComponent(panel_4,
                            GroupLayout.PREFERRED_SIZE, 97, GroupLayout.PREFERRED_SIZE))
                        .addComponent(panel_3,
                            GroupLayout.DEFAULT_SIZE, 301, Short.MAX_VALUE))

                        .addPreferredGap(ComponentPlacement.RELATED)
                        .addComponent(panel_5,
                            GroupLayout.PREFERRED_SIZE, 66, GroupLayout.PREFERRED_SIZE))
                        .addContainerGap()
                    );
    panel_6.setLayout(new FormLayout(new ColumnSpec[] {
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
```

[illegible]

```
JLabel label_19 = new JLabel("Annular");
label_19.setFont(new Font("Lucida Grande", Font.BOLD, 13));
panel_6.add(label_19, "8, 2");

JLabel label_20 = new JLabel("Volume");
label_20.setFont(new Font("Lucida Grande", Font.BOLD, 13));
panel_6.add(label_20, "8, 4");

JLabel label_4 = new JLabel("Open Hole - Drill Collar");
panel_6.add(label_4, "1, 6, left, default");

textField_19 = new JTextField();
textField_19.setColumns(10);
panel_6.add(textField_19, "2, 6, 2, 1, fill, default");

JLabel lblGalft = new JLabel("gal/ft");
panel_6.add(lblGalft, "5, 6, right, default");

textField_22 = new JTextField();
textField_22.setColumns(10);
panel_6.add(textField_22, "7, 6, 2, 1, fill, default");

JLabel lblBbl = new JLabel("bbl");
panel_6.add(lblBbl, "10, 6");

JLabel label_2 = new JLabel("Open Hole - Drill Pipe");
panel_6.add(label_2, "1, 8, left, default");

textField_20 = new JTextField();
textField_20.setColumns(10);
panel_6.add(textField_20, "2, 8, 2, 1, fill, default");

JLabel lblGalft_1 = new JLabel("gal/ft");
panel_6.add(lblGalft_1, "5, 8, left, default");

textField_23 = new JTextField();
textField_23.setColumns(10);
panel_6.add(textField_23, "7, 8, 2, 1, fill, default");

JLabel lblBbl_1 = new JLabel("bbl");
panel_6.add(lblBbl_1, "10, 8");

JLabel label_3 = new JLabel("Casing - Drill Pipe");
panel_6.add(label_3, "1, 10, left, default");

textField_21 = new JTextField();
textField_21.setColumns(10);
panel_6.add(textField_21, "2, 10, 2, 1, fill, default");

JLabel lblGalft_2 = new JLabel("gal/ft");
panel_6.add(lblGalft_2, "5, 10, right, default");

textField_24 = new JTextField();
textField_24.setColumns(10);
panel_6.add(textField_24, "7, 10, 2, 1, fill, default");

JLabel lblBbl_2 = new JLabel("bbl");
panel_6.add(lblBbl_2, "10, 10");

JLabel label_5 = new JLabel("Distance top Drill Collar to Casing
Shoe");
panel_6.add(label_5, "1, 12, 3, 1");

textField_25 = new JTextField();
textField_25.setColumns(10);
panel_6.add(textField_25, "6, 12, 3, 1, fill, default");
```

```
JLabel lblFt = new JLabel("ft");
panel_6.add(lblFt, "10, 12");

JLabel label_6 = new JLabel("Temperature Gradient");
panel_6.add(label_6, "1, 14");

textField_26 = new JTextField();
panel_6.add(textField_26, "6, 14, 3, 1, fill, default");
textField_26.setColumns(10);

JLabel lblfft = new JLabel("\u00BAF/100ft");
panel_6.add(lblfft, "10, 14");

JLabel label_7 = new JLabel("Fracture Pressure @ Casing Shoe");
panel_6.add(label_7, "1, 16");

textField_27 = new JTextField();
panel_6.add(textField_27, "6, 16, 3, 1, fill, default");
textField_27.setColumns(10);

JLabel label_26 = new JLabel("bar");
panel_6.add(label_26, "10, 16");

JLabel label_8 = new JLabel("Fracture Gradient @ Total Depth");
panel_6.add(label_8, "1, 18");

textField_28 = new JTextField();
panel_6.add(textField_28, "6, 18, 3, 1, fill, default");
textField_28.setColumns(10);

JLabel label_27 = new JLabel("bar");
panel_6.add(label_27, "10, 18");

JLabel label_9 = new JLabel("Allowable Influx Height");
panel_6.add(label_9, "1, 20");

textField_29 = new JTextField();
panel_6.add(textField_29, "6, 20, 3, 1, fill, default");
textField_29.setColumns(10);

JLabel lblFtTvd = new JLabel("ft TVD");
panel_6.add(lblFtTvd, "10, 20");

JLabel label_10 = new JLabel("Lenght of Kick @ Casing Shoe");
panel_6.add(label_10, "1, 22");

textField_30 = new JTextField();
panel_6.add(textField_30, "6, 22, 3, 1, fill, default");
textField_30.setColumns(10);

JLabel lblFtMd = new JLabel("ft MD");
panel_6.add(lblFtMd, "10, 22");

JLabel label_11 = new JLabel("Lenght of Kick @ True Depth");
panel_6.add(label_11, "1, 24");

textField_31 = new JTextField();
panel_6.add(textField_31, "6, 24, 3, 1, fill, default");
textField_31.setColumns(10);

JLabel lblFtMd_1 = new JLabel("ft MD");
panel_6.add(lblFtMd_1, "10, 24");

JLabel label_12 = new JLabel("Kick Size on Shut in");
panel_6.add(label_12, "1, 26");
```

```
textField_32 = new JTextField();
panel_6.add(textField_32, "6, 26, 3, 1, fill, default");
textField_32.setColumns(10);

JLabel lblBbl_3 = new JLabel("bbl");
panel_6.add(lblBbl_3, "10, 26");

JLabel label_13 = new JLabel("Kick Size @ Shoe");
panel_6.add(label_13, "1, 28");

textField_33 = new JTextField();
panel_6.add(textField_33, "6, 28, 3, 1, fill, default");
textField_33.setColumns(10);

JLabel lblBbl_4 = new JLabel("bbl");
panel_6.add(lblBbl_4, "10, 28");

JLabel label_14 = new JLabel("Gas - Shoe Back to Total Depth");
panel_6.add(label_14, "1, 30");

textField_34 = new JTextField();
panel_6.add(textField_34, "6, 30, 3, 1, fill, default");
textField_34.setColumns(10);

JLabel lblBbl_5 = new JLabel("bbl");
panel_6.add(lblBbl_5, "10, 30");

JLabel label_15 = new JLabel("MAASP");
panel_6.add(label_15, "1, 32");

textField_35 = new JTextField();
panel_6.add(textField_35, "6, 32, 3, 1, fill, default");
textField_35.setColumns(10);

JLabel label_28 = new JLabel("bar");
panel_6.add(label_28, "10, 32");

textField_18 = new JTextField();
textField_18.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_18.setColumns(10);
panel_6.add(textField_18, "1, 34, 9, 1, fill, default");

JLabel lblNewLabel = new JLabel("Mud Weight");
lblNewLabel.setForeground(Color.RED);
lblNewLabel.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMinKickTolerance = new JLabel("Min. Mud Weight:");
lblMinKickTolerance.setForeground(Color.RED);
lblMinKickTolerance.setFont(new Font("Lucida Grande", Font.BOLD, 14));

textField_16 = new JTextField();
textField_16.setColumns(10);

JLabel lblUnit_12 = new JLabel("ppg");
lblUnit_12.setFont(new Font("Lucida Grande", Font.BOLD, 13));
lblUnit_12.setForeground(new Color(255, 0, 0));

JLabel lblCalculatedKickTolerance = new JLabel("Max. Mud Weight:");
lblCalculatedKickTolerance.setForeground(Color.RED);
lblCalculatedKickTolerance.setFont(new Font("Lucida Grande",
Font.BOLD, 14));

textField_17 = new JTextField();
textField_17.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_17.setForeground(Color.RED);
textField_17.setColumns(10);
```

```
JLabel lblUnit_13 = new JLabel("ppg");
lblUnit_13.setForeground(Color.RED);
lblUnit_13.setFont(new Font("Lucida Grande", Font.BOLD, 13));
GridLayout gl_panel_5 = new GridLayout(panel_5);
gl_panel_5.setHorizontalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblMinKickTolerance)
            .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(textField_16,
                GroupLayout.PREFERRED_SIZE, GroupLayout.PREFERRED_SIZE)
            .addGap(18)
            .addComponent(lblUnit_12)
            .addPreferredGap(ComponentPlacement.RELATED, 92,
                Short.MAX_VALUE)
            .addComponent(lblCalculatedKickTolerance)
            .addPreferredGap(ComponentPlacement.UNRELATED)
            .addComponent(textField_17,
                GroupLayout.PREFERRED_SIZE, GroupLayout.PREFERRED_SIZE)
            .addGap(18)
            .addComponent(lblUnit_13)
            .addGap(43))
        .addGroup(gl_panel_5.createSequentialGroup()
            .addGap(322)
            .addComponent(lblNewLabel)
            .addContainerGap(302, Short.MAX_VALUE))
);
gl_panel_5.setVerticalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblNewLabel)
            .addGap(5)

            .addGroup(gl_panel_5.createParallelGroup(Alignment.BASELINE)
                .addComponent(lblMinKickTolerance)
                .addComponent(textField_16,
                    GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_12)
                .addComponent(lblUnit_13)
                .addComponent(textField_17,
                    GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblCalculatedKickTolerance)
                .addContainerGap(12, Short.MAX_VALUE))
            );
panel_5.setLayout(gl_panel_5);

JLabel lblSafetyDetails = new JLabel("SAFETY DETAILS");
lblSafetyDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblChokeLoss = new JLabel("Choke Loss:");
lblChokeLoss.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_14 = new JTextField();
textField_14.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Choke = Double.parseDouble(textField_14.getText());
    }
});
textField_14.setColumns(10);

JLabel lblSafetyMargin = new JLabel("Safety Margin:");
lblSafetyMargin.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_15 = new JTextField();
```

```
textField_15.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Smargin = Double.parseDouble(textField_15.getText());
    }
});
textField_15.setColumns(10);

JLabel lblUnit_10 = new JLabel("psi");

JLabel lblUnit_11 = new JLabel("psi");
GroupLayout gl_panel_4 = new GroupLayout(panel_4);
gl_panel_4.setHorizontalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup())

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_4.createSequentialGroup()
        .addGap(112)
        .addComponent(lblSafetyDetails)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblChokeLoss)
    .addComponent(lblSafetyMargin)
    .addGap(40)

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING, false)
    .addComponent(textField_15, 0,
0, Short.MAX_VALUE)
    .addComponent(textField_14,
GroupLayout.DEFAULT_SIZE, 126, Short.MAX_VALUE)
    .addGap(18)

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblUnit_11)
    .addComponent(lblUnit_10)))
    .addContainerGap(29, GroupLayout.PREFERRED_SIZE))
);
gl_panel_4.setVerticalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblSafetyDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblChokeLoss)
    .addComponent(textField_14,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_10)
    .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblSafetyMargin)
    .addComponent(textField_15,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_11)
    .addContainerGap(67, Short.MAX_VALUE))
);
panel_4.setLayout(gl_panel_4);

JLabel lblPressureDetails = new JLabel("PRESSURE DETAILS");
lblPressureDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMudWeight = new JLabel("Min. Kick Tolerance:");
```



```
lblMudWeight.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblInfluxDensity = new JLabel("Influx Density:");
lblInfluxDensity.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblPorePressure = new JLabel("Pore Pressure @ TD:");
lblPorePressure.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblFractureGradient = new JLabel("Fracture Gradient @ Shoe:");
lblFractureGradient.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblTemperatureShoe = new JLabel("Temperature @ Shoe:");
lblTemperatureShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTemperatureTd = new JLabel("Temperature @ TD:");
lblTemperatureTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_8 = new JTextField();
textField_8.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        MinKick = Double.parseDouble(textField_8.getText());
    }
});
textField_8.setColumns(10);

textField_9 = new JTextField();
textField_9.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Influx = Double.parseDouble(textField_9.getText());
    }
});
textField_9.setColumns(10);

textField_10 = new JTextField();
textField_10.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ppres = Double.parseDouble(textField_10.getText());
    }
});
textField_10.setColumns(10);

textField_11 = new JTextField();
textField_11.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Fgrad = Double.parseDouble(textField_11.getText());
    }
});
textField_11.setColumns(10);

textField_12 = new JTextField();
textField_12.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temps = Double.parseDouble(textField_12.getText());
    }
});
textField_12.setColumns(10);

textField_13 = new JTextField();
textField_13.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
```

```
        Temptd = Double.parseDouble(textField_13.getText());
    }
});
textField_13.setColumns(10);

JLabel lblUnit_6 = new JLabel("bbl");

JLabel lblUnit_7 = new JLabel("ppg");

JLabel lblUnit_8 = new JLabel("EMW -ppg");

JLabel lblUnit_9 = new JLabel("EMW -ppg");

JLabel lblunit = new JLabel("\u00BAF");

JLabel lblunit_1 = new JLabel("\u00BAF");
GroupLayout gl_panel_3 = new GroupLayout(panel_3);
gl_panel_3.setHorizontalGroup(
    gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup())

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_3.createSequentialGroup())
        .addContainerGap()

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING, false)

.addGroup(gl_panel_3.createSequentialGroup())

.addComponent(lblTemperatureTd)

.addPreferredGap(ComponentPlacement.UNRELATED)

.addComponent(textField_13, 0, 0, Short.MAX_VALUE)

.addPreferredGap(ComponentPlacement.UNRELATED)

                                .addComponent(lblunit_1)
                                .addGap(50))

.addGroup(gl_panel_3.createSequentialGroup())

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_3.createSequentialGroup())

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(lblMudWeight)

.addComponent(lblInfluxDensity)

.addComponent(lblPorePressure)

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING, false)

.addComponent(textField_10, 0, 0, Short.MAX_VALUE)

.addComponent(textField_9, 0, 0, Short.MAX_VALUE)

.addComponent(textField_8, GroupLayout.DEFAULT_SIZE, 124, Short.MAX_VALUE)))

.addGroup(gl_panel_3.createSequentialGroup())

.addComponent(lblFractureGradient)
```

```
.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_11, GroupLayout.PREFERRED_SIZE, 81,
GroupLayout.PREFERRED_SIZE))

.addGroup(gl_panel_3.createSequentialGroup())

.addComponent(lblTemperatureShoe)

.addPreferredGap(ComponentPlacement.UNRELATED)

.addComponent(textField_12, GroupLayout.PREFERRED_SIZE, 106,
GroupLayout.PREFERRED_SIZE))

.addGap(18)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addComponent(lblUnit_7)

.addComponent(lblUnit_6)

.addComponent(lblUnit_8)

.addComponent(lblUnit_9)

.addComponent(lblunit))))

.addGroup(gl_panel_3.createSequentialGroup()

.addGap(107)

.addComponent(lblPressureDetails))

.addGap(34)

);
gl_panel_3.setVerticalGroup(
gl_panel_3.createParallelGroup(Alignment.LEADING)
.addGroup(gl_panel_3.createSequentialGroup()

.addContainerGap()

.addComponent(lblPressureDetails)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_3.createSequentialGroup()

.addGap(12)

.addComponent(lblMudWeight))

.addGroup(gl_panel_3.createSequentialGroup()

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)

.addComponent(textField_8,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(lblUnit_6)))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)

.addComponent(lblInfluxDensity)

.addComponent(textField_9,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(lblUnit_7))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)

.addComponent(lblPorePressure)

.addComponent(textField_10,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

.addComponent(lblUnit_8))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)

.addComponent(lblFractureGradient)
```

```
.addComponent(textField_11,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_9))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblTemperatureShoe)
.addComponent(textField_12,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblunit))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblTemperatureTd)
.addComponent(textField_13,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addComponent(lblunit_1))
.addContainerGap(71, Short.MAX_VALUE))
);
panel_3.setLayout(gl_panel_3);

JLabel lblBhaLenght = new JLabel("BHA Lenght");
lblBhaLenght.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblStringDetails = new JLabel("STRING DETAILS");
lblStringDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblOd = new JLabel("BHA OD:");
lblOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillCollarLenght = new JLabel("Drill Collar Lenght:");
lblDrillCollarLenght.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblOd_1 = new JLabel("Drill Collar OD:");
lblOd_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillPipeOd = new JLabel("Drill Pipe OD:");
lblDrillPipeOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_6 = new JTextField();
textField_6.addFocusListener(new FocusAdapter() {
@Override
public void focusLost(FocusEvent e) {
BHA = Double.parseDouble(textField_6.getText());
}
});
textField_6.setColumns(10);

String[] BHACombo={"", "9 1/2'", "8'", "6 1/2'", "4 3/4'", "3 1/2'"};
comboBox_2 = new JComboBox(BHACombo);
comboBox_2.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent arg0) {

int a= comboBox_2.getSelectedIndex();
BHASize= new double[] {0,9.5,8,6.5,4.75,3.5};
BHAod= BHASize[a];

}
});

textField_7 = new JTextField();
textField_7.addFocusListener(new FocusAdapter() {
@Override
public void focusLost(FocusEvent e) {
```

```
        DClenght = Double.parseDouble(textField_7.getText());
    }
});
textField_7.setColumns(10);

String[] Collar={"", "9 1/2'", "8 1/4'", "8'", "7 1/4'", "7'", "6
3/4'", "6 1/2'", "6 1/4'", "6'", "5'", "4 3/4'", "4 1/8'", "3 1/2'", "3 1/8'"};
comboBox_3 = new JComboBox(Collar);
comboBox_3.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int b= comboBox_3.getSelectedIndex();
        DCSize= new double[]
{0,9.5,8.25,8,7.25,7,6.75,6.5,6.25,6,5,4.75,4.125,3.5,3.125};
        DCod= DCSize[b];
    }
});

String[] Pipe={"", "6 5/8'", "5 1/2'", "5'", "4 1/2'", "4'", "3
1/2'", "2 7/8'", "2 3/8'"};
comboBox_4 = new JComboBox(Pipe);
comboBox_4.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {

        int c= comboBox_4.getSelectedIndex();
        DPSize= new double[]
{0,6.625,5.5,5,4.5,4,3.5,2.875,2.375};
        DPod= DPSize[c];
    }
});

JLabel lblUnit_4 = new JLabel("ft");

JLabel lblUnit_5 = new JLabel("ft");
lblUnit_5.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel_2 = new GroupLayout(panel_2);
gl_panel_2.setHorizontalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_2.createSequentialGroup()
                .addGap(116)
                .addComponent(lblStringDetails))
            .addGroup(gl_panel_2.createSequentialGroup()
                .addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addComponent(lblBhaLenght)
            .addComponent(lblOd)
            .addGap(55)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
            .addComponent(comboBox_2, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(textField_6))
            .addGap(18)
            .addComponent(lblUnit_4))
            .addGroup(gl_panel_2.createSequentialGroup()
                .addContainerGap()

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)

.addComponent(lblDrillCollarLenght)

.addComponent(lblOd_1)
```

```
.addComponent(lblDrillPipeOd))

.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
                                                .addComponent(comboBox_4, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                                .addComponent(comboBox_3, 0,
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                                .addComponent(textField_7))
.addGap(18)
.addComponent(lblUnit_5)))
.addContainerGap(81, Short.MAX_VALUE))
);
gl_panel_2.setVerticalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblStringDetails)
            .addGap(5)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblBhaLenght)
            .addComponent(textField_6,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_4))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblOd)
            .addComponent(comboBox_2,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblDrillCollarLenght)
            .addComponent(textField_7,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_5))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblOd_1)
            .addComponent(comboBox_3,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
            .addComponent(comboBox_4,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblDrillPipeOd))
        .addContainerGap(GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
);
panel_2.setLayout(gl_panel_2);

JLabel lblHoleSize = new JLabel("Hole Size:");
lblHoleSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblMeasuredDepth_1 = new JLabel("Measured Depth:");
lblMeasuredDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth_1 = new JLabel("TV Depth:");
lblTvDepth_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleTd = new JLabel("Angle @ TD:");
lblAngleTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));
```

```
String[] Hole={"", "36'", "33'", "32 3/8'", "32  
1/4'", "32'", "31'", "28'", "26'", "24'", "23 1/2'", "23'", "22'", "21  
3/4'", "20'", "19 1/4'", "18 1/2'", "18 1/8'", "17 1/2'", "17'", "16'", "15  
1/2'", "15'", "14 3/4'", "14 1/2'", "13 3/4'", "13 1/2'", "12 1/4'", "12'", "11  
5/8'", "10 5/8'", "9 7/8'", "9 1/2'", "8 3/4'", "8 5/8'", "8 1/2'", "8 3/8'", "7  
7/8'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6 1/8'", "6'", "5 7/8'", "5 5/8'", "5  
1/2'", "5'", "4 7/8'", "4 3/4'", "4 5/8'", "4 1/2'", "4 1/8'", "3 7/8'", "3  
3/4'"};  
  
comboBox_1 = new JComboBox(Hole);  
comboBox_1.addActionListener(new ActionListener() {  
    public void actionPerformed(ActionEvent e) {  
        int d= comboBox_1.getSelectedIndex();  
        HoleSize= new double[]  
{0.0, 36, 33, 32.375, 32.25, 32, 31, 28, 26, 24, 23.5, 23, 22, 21.75, 20, 19.25, 18.5, 18.125, 17.5, 1  
7, 16, 15.5, 15, 14.75, 14.5, 13.75, 13.5, 12.25, 12, 11.625, 10.625, 9.875, 9.5, 8.75, 8.625, 8.5,  
8.375, 7.875, 7, 6.75, 6.5, 6.25, 6.125, 6, 5.875, 5.625, 5.5, 5, 4.875, 4.75, 4.625, 4.5, 4.125, 3.  
875, 3.75};  
  
        Hsize= HoleSize[d];  
  
    }  
});  
  
textField_3 = new JTextField();  
textField_3.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Hmdepth = Double.parseDouble(textField_3.getText());  
    }  
});  
textField_3.setColumns(10);  
  
textField_2 = new JTextField();  
textField_2.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Hmdepth = Double.parseDouble(textField_2.getText());  
    }  
});  
textField_2.setColumns(10);  
  
textField_5 = new JTextField();  
textField_5.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Hatd = Double.parseDouble(textField_5.getText());  
    }  
});  
textField_5.setColumns(10);  
  
JLabel lblM = new JLabel("ft");  
  
JLabel lblUnit_3 = new JLabel("ft");  
  
JLabel label = new JLabel("Deg (\u00BA)");  
  
JLabel lblHoleDetails = new JLabel("HOLE DETAILS");  
lblHoleDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));  
GroupLayout gl_panel_1 = new GroupLayout(panel_1);  
gl_panel_1.setHorizontalGroup(  
    gl_panel_1.createParallelGroup(Alignment.LEADING)  
        .addGroup(gl_panel_1.createSequentialGroup()  
            .addContainerGap()  
  
        .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)  
            .addGroup(gl_panel_1.createSequentialGroup()
```

```
.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addComponent(lblMeasuredDepth_1)
                                .addComponent(lblAngleTd)
                                .addGap(18)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_2, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)

.addComponent(lblUnit_3))

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_3, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)
                                .addComponent(lblM)

.addGroup(gl_panel_1.createSequentialGroup())

.addComponent(textField_5, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                                .addGap(18)
                                .addComponent(label)))
                                .addComponent(lblTvDepth_1)
                                .addGroup(gl_panel_1.createSequentialGroup())
                                    .addComponent(lblHoleSize)
                                    .addGap(65)

.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
                                .addComponent(lblHoleDetails)
                                .addComponent(comboBox_1,
GroupLayout.PREFERRED_SIZE, 136, GroupLayout.PREFERRED_SIZE)))
                                .addContainerGap(17, Short.MAX_VALUE))
);
gl_panel_1.setVerticalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup())
            .addGap(7)
            .addComponent(lblHoleDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblHoleSize)
            .addComponent(comboBox_1,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(ComponentPlacement.UNRELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblMeasuredDepth_1)
            .addComponent(textField_3,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblM))
            .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblTvDepth_1)
            .addComponent(textField_2,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_3))
            .addPreferredGap(ComponentPlacement.RELATED)
```



```
.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_5,
        GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(label))
    .addComponent(lblAngleTd))
    .addContainerGap(2, Short.MAX_VALUE))
);
panel_1.setLayout(gl_panel_1);

JLabel lblCasingSize = new JLabel("Casing Size:");
lblCasingSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblCasingDetails = new JLabel("CASING DETAILS");
lblCasingDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

String[] casing={"", "4 1/2'", "5'", "5 1/2'", "6 5/8'", "7'", "7
5/8'", "8 5/8'", "9 5/8'", "10 3/4'", "11 3/4'", "13 3/8'", "16'", "18
5/8'", "20'"};
comboBox = new JComboBox(casing);
comboBox.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int e=comboBox.getSelectedIndex();
        internals = new double[]
{0,4.09,4.56,5.012,6.049,6.538,7.125,8.097,9.063,10.192,11.084,12.715,15.25,17.755,
19.124};

        Csize = internals[e];

    }
});

JLabel lblMeasuredDepth = new JLabel("Measured Depth:");
lblMeasuredDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth = new JLabel("TV Depth:");
lblTvDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleShoe = new JLabel("Angle @ Shoe:");
lblAngleShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField = new JTextField();
textField.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cmdepth = Double.parseDouble(textField.getText());
    }
});
textField.setColumns(10);

textField_1 = new JTextField();
textField_1.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cashoe = Double.parseDouble(textField_1.getText());
    }
});
textField_1.setColumns(10);

textField_4 = new JTextField();
textField_4.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ctvdepth = Double.parseDouble(textField_4.getText());
    }
})
```

```
});
textField_4.setColumns(10);

JLabel lblUnit = new JLabel("ft");

JLabel lblUnit_1 = new JLabel("Deg (\u00BA)");

JLabel lblUnit_2 = new JLabel("ft");
lblUnit_2.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel = new GroupLayout(panel);
gl_panel.setHorizontalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())

    .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())
        .addContainerGap()

    .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
        .addComponent(lblCasingSize)
        .addComponent(lblMeasuredDepth)
        .addComponent(lblTvDepth)
        .addComponent(lblAngleShoe))
        .addGap(18)

    .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

    .addGroup(gl_panel.createSequentialGroup())

    .addPreferredGap(ComponentPlacement.RELATED)

    .addComponent(textField_1, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addGap(18)

    .addComponent(lblUnit_1))

    .addGroup(gl_panel.createSequentialGroup())

    .addPreferredGap(ComponentPlacement.RELATED)

    .addComponent(textField_4, GroupLayout.PREFERRED_SIZE, 134,
GroupLayout.PREFERRED_SIZE)
        .addGap(18)

    .addComponent(lblUnit_2))

    .addGroup(gl_panel.createSequentialGroup())

    .addGroup(gl_panel.createParallelGroup(Alignment.TRAILING, false)

    .addComponent(comboBox, Alignment.LEADING, 0, GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

    .addComponent(textField, Alignment.LEADING))
        .addGap(18)

    .addComponent(lblUnit))))

    .addGroup(gl_panel.createSequentialGroup())
        .addGap(109)
        .addComponent(lblCasingDetails))
    .addContainerGap(50, Short.MAX_VALUE)
);
gl_panel.setVerticalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())
        .addContainerGap()
```

```
.addComponent(lblCasingDetails)
.addGap(3)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblCasingSize)
    .addComponent(comboBox,
 GroupLayout.PREFERRED_SIZE, 33, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit))
    .addComponent(lblMeasuredDepth))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblTvDepth)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_2))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblAngleShoe)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
    .addComponent(textField_1,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_1))
.addContainerGap()
);
panel.setLayout(gl_panel);
getContentPane().setLayout(groupLayout);

//1 OH-DC Capacity
Cap1 = (((Hsize*Hsize)-(DCod*DCod))/(1.9735));
//2 OH-DP Capacity
Cap2 = (((Hsize*Hsize)-(DPod*DPod))/(1.9735));
//3 CSG-DP Capacity
Cap3 = (((Csize*Csize)-(DPod*DPod))/(1.9735));
//4 Distance top DC to Casing Shoe
Dist1 = Hmdepth-Cmdepth-DClenght;
//5 Fracture Pressure @ shoe
FracPreS = 0.0981*Ctvdepth*Fgrad;
//6 Fracture Pressure @ TD
FracPreTD = 0.0981*Htvdepth*Ppres;
//7 Temperature Gradient
TempGrad = ((Temptd-Temps)/(Htvdepth-Ctvdepth));
//8 OH-DC Annular Volume
Vol1 = (DClenght*Cap1)/1000;
//9 OH-DP Annular Volume
Vol2 = ((Hmdepth-Cmdepth-DClenght)*(Cap2))/1000;
//10 CSG-DP Annular Volume
Vol3 = (Cmdepth*Cap3)/1000;
}
}
```

F.6 Section3.java

```
package kick.views;

import javax.swing.JInternalFrame;
```

```
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JPanel;
import javax.swing.JLabel;
import java.awt.Font;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import java.awt.Color;
import java.awt.event.FocusAdapter;
import java.awt.event.FocusEvent;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Section3 extends JFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JTextField textField;
    private JTextField textField_1;
    private JTextField textField_4;
    private JTextField textField_6;
    private JTextField textField_7;
    private JTextField textField_8;
    private JTextField textField_9;
    private JTextField textField_10;
    private JTextField textField_11;
    private JTextField textField_12;
    private JTextField textField_13;
    private JTextField textField_14;
    private JTextField textField_16;
    private JTextField textField_17;
    private JTextField textField_18;
    private JTextField textField_2;
    double Csize, Cmdepth, Ctvdepth, Cashoe;
    double Hsize;
    double BHA, BHAod, DClenght, DCod, DPod;
    double Mweight, Influx, Ppres, Fgrad, Temps, Temptd, MinKick;
    double Choke, Smargin;
    double MinDepth, MaxDepth;
    double Cap1, Cap2, Cap3;
    double Dist1, FracPreS, FracPreTD, TempGrad;
    double Vol1, Vol2, Vol3;

    private JComboBox comboBox;
    private JComboBox comboBox_2;
    private JComboBox comboBox_3;
    private JComboBox comboBox_4;
    private JComboBox comboBox_1;
    double internals[];
    double HoleSize[];
    double BHASize[];
    double DCSize[];
    double DPSize[];
    private JTextField textField_3;
    private JTextField textField_5;
    private JTextField textField_15;
    private JTextField textField_19;
    private JTextField textField_20;
    private JTextField textField_21;
    private JTextField textField_22;
    private JTextField textField_23;
```

```
private JTextField textField_24;
private JTextField textField_25;
private JTextField textField_26;
private JTextField textField_27;
private JTextField textField_28;
private JTextField textField_29;
private JTextField textField_30;
private JTextField textField_31;
private JTextField textField_32;
private JTextField textField_33;

/**
 * Create the frame.
 */
public Section3() {
    setTitle("Section Analysis - Open Hole Depth");
    setIconifiable(true);
    setClosable(true);
    setBounds(0, 0, 1250, 600);

    JPanel panel = new JPanel();

    JPanel panel_1 = new JPanel();

    JPanel panel_2 = new JPanel();

    JPanel panel_3 = new JPanel();

    JPanel panel_4 = new JPanel();

    JPanel panel_5 = new JPanel();

    JPanel panel_6 = new JPanel();
    GroupLayout groupLayout = new GroupLayout(getContentPane());
    groupLayout.setHorizontalGroup(
        groupLayout.createParallelGroup(Alignment.TRAILING)
            .addGroup(Alignment.LEADING,
                groupLayout.createSequentialGroup()
                    .addContainerGap()

                    .addGroup(groupLayout.createParallelGroup(Alignment.TRAILING, false)
                        .addComponent(panel_5, Alignment.LEADING, 0,
0, Short.MAX_VALUE)
                        .addGroup(Alignment.LEADING,
                            groupLayout.createSequentialGroup()

                                .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                                    .addComponent(panel_2, 0, 0,
Short.MAX_VALUE)
                                    .addComponent(panel,
GroupLayout.PREFERRED_SIZE, 339, Short.MAX_VALUE))
                                .addPreferredGap(ComponentPlacement.RELATED)

                                .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                                    .addComponent(panel_4,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                    .addComponent(panel_3, 0, 0,
Short.MAX_VALUE)
                                    .addComponent(panel_1,
GroupLayout.DEFAULT_SIZE, 366, Short.MAX_VALUE)))
                                .addPreferredGap(ComponentPlacement.RELATED, 43,
Short.MAX_VALUE)
                                    .addComponent(panel_6, GroupLayout.PREFERRED_SIZE,
466, GroupLayout.PREFERRED_SIZE))
                    );
}
```

[illegible]

```
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,}));  
  
JLabel label_14 = new JLabel("Capacity");  
label_14.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(label_14, "4, 2");  
  
JLabel label_15 = new JLabel("Annular");  
label_15.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(label_15, "9, 2");  
  
JLabel label_16 = new JLabel("Volume");  
label_16.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(label_16, "9, 4");  
  
JLabel label = new JLabel("Open Hole - Drill Collar");  
panel_6.add(label, "2, 6, left, default");  
  
textField_3 = new JTextField();  
panel_6.add(textField_3, "3, 6, 2, 1, fill, default");  
textField_3.setColumns(10);  
  
JLabel label_17 = new JLabel("l/m");  
panel_6.add(label_17, "6, 6");  
  
textField_19 = new JTextField();  
panel_6.add(textField_19, "8, 6, 2, 1, fill, default");  
textField_19.setColumns(10);  
  
JLabel label_20 = new JLabel("m^3");  
panel_6.add(label_20, "11, 6");  
  
JLabel label_1 = new JLabel("Open Hole - Drill Pipe");  
panel_6.add(label_1, "2, 8, left, default");  
  
textField_5 = new JTextField();  
panel_6.add(textField_5, "3, 8, 2, 1, fill, default");  
textField_5.setColumns(10);  
  
JLabel label_18 = new JLabel("l/m");  
panel_6.add(label_18, "6, 8");  
  
textField_20 = new JTextField();  
panel_6.add(textField_20, "8, 8, 2, 1, fill, default");  
textField_20.setColumns(10);  
  
JLabel label_21 = new JLabel("m^3");  
panel_6.add(label_21, "11, 8");
```

```
JLabel label_2 = new JLabel("Casing - Drill Pipe");
panel_6.add(label_2, "2, 10, left, default");

textField_15 = new JTextField();
panel_6.add(textField_15, "3, 10, 2, 1, fill, default");
textField_15.setColumns(10);

JLabel label_19 = new JLabel("l/m");
panel_6.add(label_19, "6, 10");

textField_21 = new JTextField();
panel_6.add(textField_21, "8, 10, 2, 1, fill, default");
textField_21.setColumns(10);

JLabel label_22 = new JLabel("m^3");
panel_6.add(label_22, "11, 10");

JLabel label_3 = new JLabel("Distance top Drill Collar to Casing
Shoe");
panel_6.add(label_3, "2, 12, 3, 1");

textField_22 = new JTextField();
panel_6.add(textField_22, "7, 12, 3, 1, fill, default");
textField_22.setColumns(10);

JLabel lblM = new JLabel("m");
panel_6.add(lblM, "11, 12");

JLabel label_4 = new JLabel("Temperature Gradient");
panel_6.add(label_4, "2, 14");

textField_23 = new JTextField();
panel_6.add(textField_23, "7, 14, 3, 1, fill, default");
textField_23.setColumns(10);

JLabel label_23 = new JLabel("\u00BAC/30m");
panel_6.add(label_23, "11, 14");

JLabel label_5 = new JLabel("Fracture Pressure @ Casing Shoe");
panel_6.add(label_5, "2, 16");

textField_24 = new JTextField();
panel_6.add(textField_24, "7, 16, 3, 1, fill, default");
textField_24.setColumns(10);

JLabel label_24 = new JLabel("bar");
panel_6.add(label_24, "11, 16");

JLabel label_6 = new JLabel("Fracture Gradient @ Total Depth");
panel_6.add(label_6, "2, 18");

textField_25 = new JTextField();
panel_6.add(textField_25, "7, 18, 3, 1, fill, default");
textField_25.setColumns(10);

JLabel label_25 = new JLabel("bar");
panel_6.add(label_25, "11, 18");

JLabel label_7 = new JLabel("Allowable Influx Height");
panel_6.add(label_7, "2, 20");

textField_26 = new JTextField();
panel_6.add(textField_26, "7, 20, 3, 1, fill, default");
textField_26.setColumns(10);

JLabel label_32 = new JLabel("m TVD");
panel_6.add(label_32, "11, 20");
```



```
JLabel label_8 = new JLabel("Lenght of Kick @ Casing Shoe");
panel_6.add(label_8, "2, 22");

textField_27 = new JTextField();
panel_6.add(textField_27, "7, 22, 3, 1, fill, default");
textField_27.setColumns(10);

JLabel lblMMd = new JLabel("m MD");
panel_6.add(lblMMd, "11, 22");

JLabel label_9 = new JLabel("Lenght of Kick @ True Depth");
panel_6.add(label_9, "2, 24");

textField_28 = new JTextField();
panel_6.add(textField_28, "7, 24, 3, 1, fill, default");
textField_28.setColumns(10);

JLabel lblMMd_1 = new JLabel("m MD");
panel_6.add(lblMMd_1, "11, 24");

JLabel label_10 = new JLabel("Kick Size on Shut in");
panel_6.add(label_10, "2, 26");

textField_29 = new JTextField();
panel_6.add(textField_29, "7, 26, 3, 1, fill, default");
textField_29.setColumns(10);

JLabel label_29 = new JLabel("m^3");
panel_6.add(label_29, "11, 26");

JLabel label_11 = new JLabel("Kick Size @ Shoe");
panel_6.add(label_11, "2, 28");

textField_30 = new JTextField();
panel_6.add(textField_30, "7, 28, 3, 1, fill, default");
textField_30.setColumns(10);

JLabel label_28 = new JLabel("m^3");
panel_6.add(label_28, "11, 28");

JLabel label_12 = new JLabel("Gas - Shoe Back to Total Depth");
panel_6.add(label_12, "2, 30");

textField_31 = new JTextField();
panel_6.add(textField_31, "7, 30, 3, 1, fill, default");
textField_31.setColumns(10);

JLabel label_27 = new JLabel("m^3");
panel_6.add(label_27, "11, 30");

JLabel label_13 = new JLabel("MAASP");
panel_6.add(label_13, "2, 32");

textField_32 = new JTextField();
panel_6.add(textField_32, "7, 32, 3, 1, fill, default");
textField_32.setColumns(10);

JLabel label_26 = new JLabel("bar");
panel_6.add(label_26, "11, 32");

textField_33 = new JTextField();
panel_6.add(textField_33, "2, 34, 8, 1, fill, default");
textField_33.setColumns(10);

JLabel lblNewLabel = new JLabel("Open Hole Depth");
lblNewLabel.setForeground(Color.RED);
```

```
lblNewLabel.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMinKickTolerance = new JLabel("Min Open Hole Depth:");
lblMinKickTolerance.setForeground(Color.RED);
lblMinKickTolerance.setFont(new Font("Lucida Grande", Font.BOLD, 14));

textField_16 = new JTextField();
textField_16.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
    }
});
textField_16.setColumns(10);

JLabel lblUnit_12 = new JLabel("m");
lblUnit_12.setFont(new Font("Lucida Grande", Font.BOLD, 13));
lblUnit_12.setForeground(Color.RED);

JLabel lblCalculatedKickTolerance = new JLabel("Max. Open Hole
Depth:");
lblCalculatedKickTolerance.setForeground(Color.RED);
lblCalculatedKickTolerance.setFont(new Font("Lucida Grande",
Font.BOLD, 14));

textField_17 = new JTextField();
textField_17.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
    }
});
textField_17.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_17.setForeground(Color.RED);
textField_17.setColumns(10);

JLabel lblUnit_13 = new JLabel("m");
lblUnit_13.setForeground(Color.RED);
lblUnit_13.setFont(new Font("Lucida Grande", Font.BOLD, 13));
GroupLayout gl_panel_5 = new GroupLayout(panel_5);
gl_panel_5.setHorizontalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup())

    .addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblMinKickTolerance)

        .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(textField_16,
GroupLayout.PREFERRED_SIZE, 124, GroupLayout.PREFERRED_SIZE)
            .addGap(18)
            .addComponent(lblUnit_12)
            .addGap(37)

        .addComponent(lblCalculatedKickTolerance)

        .addPreferredGap(ComponentPlacement.RELATED)
            .addComponent(textField_17,
GroupLayout.PREFERRED_SIZE, 122, GroupLayout.PREFERRED_SIZE)
            .addGap(6)
            .addComponent(lblUnit_13))
        .addGroup(gl_panel_5.createSequentialGroup()
            .addGap(322)
            .addComponent(lblNewLabel)))
        .addContainerGap(38, Short.MAX_VALUE)
    );
gl_panel_5.setVerticalGroup(
```

```
        gl_panel_5.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_5.createSequentialGroup()
                .addContainerGap()
                .addComponent(lblNewLabel)
                .addGap(5)

            .addGroup(gl_panel_5.createParallelGroup(Alignment.BASELINE)
                .addComponent(lblMinKickTolerance)
                .addComponent(textField_16,
                    GroupLayout.PREFERRED_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_12)
                .addComponent(lblCalculatedKickTolerance)
                .addComponent(textField_17,
                    GroupLayout.PREFERRED_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_13))
            .addContainerGap(12, Short.MAX_VALUE))
    );
    panel_5.setLayout(gl_panel_5);

    JLabel lblSafetyDetails = new JLabel("SAFETY DETAILS");
    lblSafetyDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

    JLabel lblChokeLoss = new JLabel("Choke Loss:");
    lblChokeLoss.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    textField_14 = new JTextField();
    textField_14.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            Choke = Double.parseDouble(textField_14.getText());
        }
    });
    textField_14.setColumns(10);

    JLabel lblSafetyMargin = new JLabel("Safety Margin:");
    lblSafetyMargin.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

    JLabel lblUnit_10 = new JLabel("bar");

    textField_2 = new JTextField();
    textField_2.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            Smargin = Double.parseDouble(textField_2.getText());
        }
    });
    textField_2.setColumns(10);

    JLabel lblUnit_11 = new JLabel("bar");
    GroupLayout gl_panel_4 = new GroupLayout(panel_4);
    gl_panel_4.setHorizontalGroup(
        gl_panel_4.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel_4.createSequentialGroup()

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addGap(112)
            .addComponent(lblSafetyDetails))
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addComponent(lblChokeLoss)
        .addComponent(lblSafetyMargin))
        .addGap(46)

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING, false)
```

```
.addComponent(textField_2, 0,
0, Short.MAX_VALUE)
GroupLayout.DEFAULT_SIZE, 126, Short.MAX_VALUE))
    .addGap(18)

    .addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addComponent(lblUnit_11)
        .addComponent(lblUnit_10)))
    .addGap(48)
);
gl_panel_4.setVerticalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblSafetyDetails)
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblChokeLoss)
            .addComponent(textField_14,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_10))
            .addPreferredGap(ComponentPlacement.RELATED)

        .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblSafetyMargin)
            .addComponent(textField_2,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
            .addComponent(lblUnit_11))
            .addContainerGap(GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
);
panel_4.setLayout(gl_panel_4);

JLabel lblPressureDetails = new JLabel("PRESSURE DETAILS");
lblPressureDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMudWeight = new JLabel("Mud Weight:");
lblMudWeight.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblInfluxDensity = new JLabel("Influx Density:");
lblInfluxDensity.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblPorePressure = new JLabel("Pore Pressure @ TD:");
lblPorePressure.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblFractureGradient = new JLabel("Fracture Gradient @ Shoe:");
lblFractureGradient.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblTemperatureShoe = new JLabel("Temperature @ Shoe:");
lblTemperatureShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTemperatureTd = new JLabel("Temperature @ TD:");
lblTemperatureTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_8 = new JTextField();
textField_8.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Mweight = Double.parseDouble(textField_8.getText());
    }
});
textField_8.setColumns(10);

textField_9 = new JTextField();
```

```
textField_9.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Influx = Double.parseDouble(textField_9.getText());
    }
});
textField_9.setColumns(10);

textField_10 = new JTextField();
textField_10.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ppres = Double.parseDouble(textField_10.getText());
    }
});
textField_10.setColumns(10);

textField_11 = new JTextField();
textField_11.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Fgrad = Double.parseDouble(textField_11.getText());
    }
});
textField_11.setColumns(10);

textField_12 = new JTextField();
textField_12.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temps = Double.parseDouble(textField_12.getText());
    }
});
textField_12.setColumns(10);

textField_13 = new JTextField();
textField_13.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Temptd = Double.parseDouble(textField_13.getText());
    }
});
textField_13.setColumns(10);

JLabel lblUnit_6 = new JLabel("SG");

JLabel lblUnit_7 = new JLabel("SG");

JLabel lblUnit_8 = new JLabel("EMW -SG");

JLabel lblUnit_9 = new JLabel("EMW -SG");

JLabel lblunit = new JLabel("\u00BAC");

JLabel lblunit_1 = new JLabel("\u00BAC");

JLabel lblMinKickTolerance_1 = new JLabel("Min. Kick Tolerance:");
lblMinKickTolerance_1.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

textField_18 = new JTextField();
textField_18.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        MinKick = Double.parseDouble(textField_18.getText());
    }
});
```

```
textField_18.setColumns(10);

JLabel lblUnit_14 = new JLabel("m3");
lblUnit_14.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel_3 = new GroupLayout(panel_3);
gl_panel_3.setHorizontalGroup(
    gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup())
        .addContainerGap()

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_3.createSequentialGroup()
            .addComponent(lblMudWeight)
            .addGap(45)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

        .addComponent(lblPressureDetails)

        .addGroup(gl_panel_3.createSequentialGroup()

            .addGap(6)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

        .addComponent(textField_9, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

        .addComponent(textField_8, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

        .addComponent(textField_10, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

        .addComponent(textField_11, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
88, GroupLayout.PREFERRED_SIZE)

        .addComponent(textField_12, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
116, GroupLayout.PREFERRED_SIZE)

            .addGap(18)

        .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

        .addComponent(lblUnit_9)

        .addComponent(lblunit)

        .addComponent(lblUnit_8)

        .addComponent(lblUnit_7)

        .addComponent(lblUnit_6))))))

        .addComponent(lblInfluxDensity)
        .addComponent(lblPorePressure)
        .addComponent(lblFractureGradient)
        .addComponent(lblTemperatureShoe)
        .addGroup(gl_panel_3.createSequentialGroup())

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addComponent(lblTemperatureTd)

    .addComponent(lblMinKickTolerance_1))

    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING, false)
        .addComponent(textField_18,
Alignment.TRAILING, 0, 0, Short.MAX_VALUE)
```

```
.addComponent(textField_13,
Alignment.TRAILING, GroupLayout.DEFAULT_SIZE, 128, Short.MAX_VALUE))
.addGap(18)

.addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
.addComponent(lblUnit_14)
.addComponent(lblunit_1)))
.addContainerGap(40, Short.MAX_VALUE))
);
gl_panel_3.setVerticalGroup(
gl_panel_3.createParallelGroup(Alignment.LEADING)
.addGroup(gl_panel_3.createSequentialGroup()
.addContainerGap()
.addComponent(lblPressureDetails)
.addPreferredGap(ComponentPlacement.UNRELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblMudWeight)
.addComponent(textField_8,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_6))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblInfluxDensity)
.addComponent(textField_9,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_7))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblPorePressure)
.addComponent(textField_10,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_8))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblFractureGradient)
.addComponent(textField_11,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_9))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblTemperatureShoe)
.addComponent(textField_12,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblunit))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblTemperatureTd)
.addComponent(textField_13,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblunit_1))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
.addComponent(lblMinKickTolerance_1)
.addComponent(textField_18,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_14))
.addContainerGap(GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
);
panel_3.setLayout(gl_panel_3);
```

```
JLabel lblBhaLenght = new JLabel("BHA Lenght");
lblBhaLenght.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblStringDetails = new JLabel("STRING DETAILS");
lblStringDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblOd = new JLabel("BHA OD:");
lblOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillCollarLenght = new JLabel("Drill Collar Lenght:");
lblDrillCollarLenght.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

JLabel lblOd_1 = new JLabel("Drill Collar OD:");
lblOd_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillPipeOd = new JLabel("Drill Pipe OD:");
lblDrillPipeOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_6 = new JTextField();
textField_6.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        BHA = Double.parseDouble(textField_6.getText());
    }
});
textField_6.setColumns(10);

String[] BHACombo={"", "9 1/2'", "8'", "6 1/2'", "4 3/4'", "3 1/2'"};
comboBox_2 = new JComboBox(BHACombo);
comboBox_2.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int a= comboBox_2.getSelectedIndex();
        BHASize= new double[] {0,9.5,8,6.5,4.75,3.5};
        BHAod= BHASize[a];

    }
});

textField_7 = new JTextField();
textField_7.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        DClenght = Double.parseDouble(textField_7.getText());
    }
});
textField_7.setColumns(10);

String[] Collar={"", "9 1/2'", "8 1/4'", "8'", "7 1/4'", "7'", "6
3/4'", "6 1/2'", "6 1/4'", "6'", "5'", "4 3/4'", "4 1/8'", "3 1/2'", "3 1/8'"};
comboBox_3 = new JComboBox(Collar);
comboBox_3.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int b= comboBox_3.getSelectedIndex();
        DCSize= new double[]
{0,9.5,8.25,8,7.25,7,6.75,6.5,6.25,6,5,4.75,4.125,3.5,3.125};
        DCod= DCSize[b];

    }
});

String[] Pipe={"", "6 5/8'", "5 1/2'", "5'", "4 1/2'", "4'", "3
1/2'", "2 7/8'", "2 3/8'"};
comboBox_4 = new JComboBox(Pipe);
comboBox_4.addActionListener(new ActionListener() {
```



```
public void actionPerformed(ActionEvent e) {  
    int c= comboBox_4.getSelectedIndex();  
    DPSize= new double[]  
{0,6.625,5.5,5,4.5,4,3.5,2.875,2.375};  
    DPod= DPSize[c];  
  
    }  
});  
  
JLabel lblUnit_4 = new JLabel("m");  
  
JLabel lblUnit_5 = new JLabel("m");  
lblUnit_5.setFont(new Font("Lucida Grande", Font.PLAIN, 13));  
GroupLayout gl_panel_2 = new GroupLayout(panel_2);  
gl_panel_2.setHorizontalGroup(  
    gl_panel_2.createParallelGroup(Alignment.LEADING)  
        .addGroup(gl_panel_2.createSequentialGroup()  
  
.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)  
    .addGroup(gl_panel_2.createSequentialGroup()  
        .addGap(116)  
        .addComponent(lblStringDetails)  
        .addGroup(gl_panel_2.createSequentialGroup()  
            .addContainerGap()  
  
.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)  
    .addComponent(lblBhaLenght)  
    .addComponent(lblOd)  
    .addGap(55)  
  
.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)  
    .addComponent(comboBox_2, 0,  
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)  
    .addComponent(textField_6))  
    .addGap(18)  
    .addComponent(lblUnit_4))  
    .addGroup(gl_panel_2.createSequentialGroup()  
        .addContainerGap()  
  
.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)  
  
.addComponent(lblDrillCollarLenght)  
  
        .addComponent(lblOd_1)  
        .addComponent(lblDrillPipeOd))  
  
.addPreferredGap(ComponentPlacement.RELATED)  
  
.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)  
    .addComponent(comboBox_4, 0,  
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)  
    .addComponent(comboBox_3, 0,  
GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)  
    .addComponent(textField_7))  
    .addGap(18)  
    .addComponent(lblUnit_5))  
    .addContainerGap(67, Short.MAX_VALUE))  
);  
gl_panel_2.setVerticalGroup(  
    gl_panel_2.createParallelGroup(Alignment.LEADING)  
        .addGroup(gl_panel_2.createSequentialGroup()  
            .addContainerGap()  
            .addComponent(lblStringDetails)  
            .addGap(5)  
  
.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)  
    .addComponent(lblBhaLenght)
```

```
.addComponent(textField_6,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_4))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
.addComponent(lblOd)
.addComponent(comboBox_2,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
.addComponent(lblDrillCollarLenght)
.addComponent(textField_7,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_5))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
.addComponent(lblOd_1)
.addComponent(comboBox_3,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
.addComponent(comboBox_4,
GridLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblDrillPipeOd))
.addContainerGap(11, Short.MAX_VALUE))
);
panel_2.setLayout(gl_panel_2);

JLabel lblHoleSize = new JLabel("Hole Size:");
lblHoleSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

String[] Hole={"", "36'", "33'", "32 3/8'", "32
1/4'", "32'", "31'", "28'", "26'", "24'", "23 1/2'", "23'", "22'", "21
3/4'", "20'", "19 1/4'", "18 1/2'", "18 1/8'", "17 1/2'", "17'", "16'", "15
1/2'", "15'", "14 3/4'", "14 1/2'", "13 3/4'", "13 1/2'", "12 1/4'", "12'", "11
5/8'", "10 5/8'", "9 7/8'", "9 1/2'", "8 3/4'", "8 5/8'", "8 1/2'", "8 3/8'", "7
7/8'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6 1/8'", "6'", "5 7/8'", "5 5/8'", "5
1/2'", "5'", "4 7/8'", "4 3/4'", "4 5/8'", "4 1/2'", "4 1/8'", "3 7/8'", "3
3/4'"};

comboBox_1 = new JComboBox(Hole);
comboBox_1.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int d= comboBox_1.getSelectedIndex();
        HoleSize= new double[]
{0.0,36,33,32.375,32.25,32,31,28,26,24,23.5,23,22,21.75,20,19.25,18.5,18.125,17.5,1
7,16,15.5,15,14.75,14.5,13.75,13.5,12.25,12,11.625,10.625,9.875,9.5,8.75,8.625,8.5,
8.375,7.875,7,6.75,6.5,6.25,6.125,6,5.875,5.625,5.5,5,4.875,4.75,4.625,4.5,4.125,3.
875,3.75};

        Hsize= HoleSize[d];

    }
});

JLabel lblHoleDetails = new JLabel("HOLE DETAILS");
lblHoleDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));
GroupLayout gl_panel_1 = new GroupLayout(panel_1);
gl_panel_1.setHorizontalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblHoleSize)
            .addGap(65)
        )
);
```

```
.addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
    .addComponent(lblHoleDetails)
    .addComponent(comboBox_1,
        GroupLayout.PREFERRED_SIZE, 136, GroupLayout.PREFERRED_SIZE))
    .addContainerGap(101, Short.MAX_VALUE))
);
gl_panel_1.setVerticalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup()
            .addGap(7)
            .addComponent(lblHoleDetails)
            .addPreferredGap(ComponentPlacement.RELATED))
        .addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
            .addComponent(lblHoleSize)
            .addComponent(comboBox_1,
                GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
            .addContainerGap(GroupLayout.DEFAULT_SIZE,
                Short.MAX_VALUE))
);
panel_1.setLayout(gl_panel_1);

JLabel lblCasingSize = new JLabel("Casing Size:");
lblCasingSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblCasingDetails = new JLabel("CASING DETAILS");
lblCasingDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

String[] casing={"", "4 1/2'", "5'", "5 1/2'", "6 5/8'", "7'", "7
5/8'", "8 5/8'", "9 5/8'", "10 3/4'", "11 3/4'", "13 3/8'", "16'", "18
5/8'", "20'"};
comboBox = new JComboBox(casing);
comboBox.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int e=comboBox.getSelectedIndex();
        internals = new double[]
{0,4.09,4.56,5.012,6.049,6.538,7.125,8.097,9.063,10.192,11.084,12.715,15.25,17.755,
19.124};

        Csize = internals[e];

    }
});

JLabel lblMeasuredDepth = new JLabel("Measured Depth:");
lblMeasuredDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth = new JLabel("TV Depth:");
lblTvDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleShoe = new JLabel("Angle @ Shoe:");
lblAngleShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField = new JTextField();
textField.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cmdepth = Double.parseDouble(textField.getText());
    }
});
textField.setColumns(10);

textField_1 = new JTextField();
textField_1.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cashoe = Double.parseDouble(textField_1.getText());
    }
});
```

```
    }  
    });  
    textField_1.setColumns(10);  
  
    textField_4 = new JTextField();  
    textField_4.addFocusListener(new FocusAdapter() {  
        @Override  
        public void focusLost(FocusEvent e) {  
            Ctvdepth = Double.parseDouble(textField_4.getText());  
        }  
    });  
    textField_4.setColumns(10);  
  
    JLabel lblUnit = new JLabel("m");  
  
    JLabel lblUnit_1 = new JLabel("Deg (\u00BA)");  
  
    JLabel lblUnit_2 = new JLabel("m");  
    lblUnit_2.setFont(new Font("Lucida Grande", Font.PLAIN, 13));  
    GroupLayout gl_panel = new GroupLayout(panel);  
    gl_panel.setHorizontalGroup(  
        gl_panel.createParallelGroup(Alignment.LEADING)  
            .addGroup(gl_panel.createSequentialGroup()  
  
                .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)  
                    .addGroup(gl_panel.createSequentialGroup()  
                        .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)  
                            .addComponent(lblCasingSize)  
                            .addComponent(lblMeasuredDepth)  
                            .addComponent(lblTvDepth)  
                            .addComponent(lblAngleShoe))  
                        .addGap(18)  
                    )  
                )  
            )  
        )  
    );  
    gl_panel.setVerticalGroup(  
        gl_panel.createParallelGroup(Alignment.LEADING)  
            .addGroup(gl_panel.createSequentialGroup()  
                .addPreferredGap(ComponentPlacement.RELATED)  
                .addComponent(textField_1, GroupLayout.PREFERRED_SIZE,  
                    GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)  
                .addGap(18)  
                .addComponent(lblUnit_1)  
                .addGroup(gl_panel.createSequentialGroup()  
                    .addPreferredGap(ComponentPlacement.RELATED)  
                    .addComponent(textField_4, GroupLayout.PREFERRED_SIZE, 134,  
                        GroupLayout.PREFERRED_SIZE)  
                    .addGap(18)  
                    .addComponent(lblUnit_2)  
                    .addGroup(gl_panel.createSequentialGroup()  
                        .addGroup(gl_panel.createParallelGroup(Alignment.TRAILING, false)  
                            .addComponent(comboBox, Alignment.LEADING, 0, GroupLayout.DEFAULT_SIZE,  
                                Short.MAX_VALUE)  
                            .addComponent(textField, Alignment.LEADING)  
                        )  
                    )  
                )  
            )  
    );
```

```
.addComponent(lblUnit)))

        .addGroup(gl_panel.createSequentialGroup()
            .addGap(109)
            .addComponent(lblCasingDetails))
        .addContainerGap(36, Short.MAX_VALUE)
    );
    gl_panel.setVerticalGroup(
        gl_panel.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_panel.createSequentialGroup()
                .addContainerGap()
                .addComponent(lblCasingDetails)
                .addGap(3)

            .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
                .addComponent(lblCasingSize)
                .addComponent(comboBox,
 GroupLayout.PREFERRED_SIZE, 33, GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(ComponentPlacement.RELATED)

            .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

            .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
                .addComponent(textField,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit))
                .addComponent(lblMeasuredDepth))
            .addPreferredGap(ComponentPlacement.RELATED)

            .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
                .addComponent(lblTvDepth)

            .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
                .addComponent(textField_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_2))
            .addPreferredGap(ComponentPlacement.RELATED)

            .addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
                .addComponent(lblAngleShoe)

            .addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
                .addComponent(textField_1,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_1))
            .addContainerGap()
    );
    panel.setLayout(gl_panel);
    getContentPane().setLayout(groupLayout);
}
```

F.7 Section3_US.java

```
package kick.views;

import javax.swing.JInternalFrame;
import javax.swing.GroupLayout;
import javax.swing.GroupLayout.Alignment;
import javax.swing.JPanel;
import javax.swing.JLabel;
import java.awt.Font;
import javax.swing.LayoutStyle.ComponentPlacement;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import java.awt.Color;
import java.awt.event.FocusAdapter;
import java.awt.event.FocusEvent;
```

```
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Section3_US extends JInternalFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JTextField textField;
    private JTextField textField_1;
    private JTextField textField_4;
    private JTextField textField_6;
    private JTextField textField_7;
    private JTextField textField_8;
    private JTextField textField_9;
    private JTextField textField_10;
    private JTextField textField_11;
    private JTextField textField_12;
    private JTextField textField_13;
    private JTextField textField_14;
    private JTextField textField_16;
    private JTextField textField_17;
    private JTextField textField_18;
    private JTextField textField_2;
    double Csize, Cmdepth, Ctvdepth, Cashoe;
    double Hsize;
    double BHA, BHAod, DClenght, DCod, DPod;
    double Mweight, Influx, Ppres, Fgrad, Temps, Temptd, MinKick;
    double Choke, Smargin;
    double MinDepth, MaxDepth;
    double Cap1, Cap2, Cap3;
    double Dist1, FracPreS, FracPreTD, TempGrad;
    double Vol1, Vol2, Vol3;

    private JComboBox comboBox;
    private JComboBox comboBox_2;
    private JComboBox comboBox_3;
    private JComboBox comboBox_4;
    private JComboBox comboBox_1;
    double internals[];
    double HoleSize[];
    double BHASize[];
    double DCSize[];
    double DPSize[];
    private JTextField textField_3;
    private JTextField textField_5;
    private JTextField textField_15;
    private JTextField textField_19;
    private JTextField textField_20;
    private JTextField textField_21;
    private JTextField textField_22;
    private JTextField textField_23;
    private JTextField textField_24;
    private JTextField textField_25;
    private JTextField textField_26;
    private JTextField textField_27;
    private JTextField textField_28;
    private JTextField textField_29;
    private JTextField textField_30;
    private JTextField textField_31;
    private JTextField textField_32;
    private JTextField textField_33;
```

```
/**
 * Create the frame.
 */
public Section3_US() {
    setTitle("Section Analysis - Open Hole Depth");
    setIconifiable(true);
    setClosable(true);
    setBounds(0, 0, 1250, 600);

    JPanel panel = new JPanel();

    JPanel panel_1 = new JPanel();

    JPanel panel_2 = new JPanel();

    JPanel panel_3 = new JPanel();

    JPanel panel_4 = new JPanel();

    JPanel panel_5 = new JPanel();

    JPanel panel_6 = new JPanel();
    GroupLayout groupLayout = new GroupLayout(getContentPane());
    groupLayout.setHorizontalGroup(
        groupLayout.createParallelGroup(Alignment.LEADING)
            .addGroup(groupLayout.createSequentialGroup()
                .addContainerGap()

                .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                    .addComponent(panel_5, 0, 0,
Short.MAX_VALUE)

                    .addGroup(groupLayout.createSequentialGroup()

                        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                            .addComponent(panel_2, 0, 0,
Short.MAX_VALUE)
                            .addComponent(panel,
GroupLayout.PREFERRED_SIZE, 339, Short.MAX_VALUE))
                        .addPreferredGap(ComponentPlacement.RELATED)

                        .addGroup(groupLayout.createParallelGroup(Alignment.LEADING)
                            .addComponent(panel_4,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                            .addGroup(groupLayout.createParallelGroup(Alignment.LEADING, false)
                                .addComponent(panel_3,
0, 0, Short.MAX_VALUE)
                                .addComponent(panel_1,
GroupLayout.DEFAULT_SIZE, 366, Short.MAX_VALUE))))
                        .addPreferredGap(ComponentPlacement.RELATED, 43,
Short.MAX_VALUE)
                        .addComponent(panel_6, GroupLayout.PREFERRED_SIZE,
466, GroupLayout.PREFERRED_SIZE))
                );
    groupLayout.setVerticalGroup(
        groupLayout.createParallelGroup(Alignment.TRAILING)
            .addGroup(groupLayout.createSequentialGroup()
                .addContainerGap()

                .addGroup(groupLayout.createParallelGroup(Alignment.TRAILING)
                    .addComponent(panel_6, Alignment.LEADING,
GroupLayout.DEFAULT_SIZE, GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                    .addGroup(groupLayout.createSequentialGroup()
```

[illegible]


```
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,  
FormFactory.RELATED_GAP_ROWSPEC,  
FormFactory.DEFAULT_ROWSPEC,}});  
  
JLabel label_14 = new JLabel("Capacity");  
label_14.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(label_14, "3, 2");  
  
JLabel label_15 = new JLabel("Annular");  
label_15.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(label_15, "8, 2");  
  
JLabel label_16 = new JLabel("Volume");  
label_16.setFont(new Font("Lucida Grande", Font.BOLD, 13));  
panel_6.add(label_16, "8, 4");  
  
JLabel label = new JLabel("Open Hole - Drill Collar");  
panel_6.add(label, "1, 6, left, default");  
  
textField_3 = new JTextField();  
panel_6.add(textField_3, "2, 6, 2, 1, fill, default");  
textField_3.setColumns(10);  
  
JLabel lblGalft = new JLabel("gal/ft");  
panel_6.add(lblGalft, "5, 6");  
  
textField_19 = new JTextField();  
panel_6.add(textField_19, "7, 6, 2, 1, fill, default");  
textField_19.setColumns(10);  
  
JLabel lblBbl = new JLabel("bbl");  
panel_6.add(lblBbl, "10, 6");  
  
JLabel label_1 = new JLabel("Open Hole - Drill Pipe");  
panel_6.add(label_1, "1, 8, left, default");  
  
textField_5 = new JTextField();  
panel_6.add(textField_5, "2, 8, 2, 1, fill, default");  
textField_5.setColumns(10);  
  
JLabel lblGalft_1 = new JLabel("gal/ft");  
panel_6.add(lblGalft_1, "5, 8");  
  
textField_20 = new JTextField();  
panel_6.add(textField_20, "7, 8, 2, 1, fill, default");  
textField_20.setColumns(10);  
  
JLabel lblBbl_1 = new JLabel("bbl");  
panel_6.add(lblBbl_1, "10, 8");  
  
JLabel label_2 = new JLabel("Casing - Drill Pipe");  
panel_6.add(label_2, "1, 10, left, default");  
  
textField_15 = new JTextField();  
panel_6.add(textField_15, "2, 10, 2, 1, fill, default");  
textField_15.setColumns(10);  
  
JLabel lblGalft_2 = new JLabel("gal/ft");  
panel_6.add(lblGalft_2, "5, 10");  
  
textField_21 = new JTextField();
```

```
panel_6.add(textField_21, "7, 10, 2, 1, fill, default");
textField_21.setColumns(10);

JLabel lblBbl_2 = new JLabel("bbl");
panel_6.add(lblBbl_2, "10, 10");

JLabel label_3 = new JLabel("Distance top Drill Collar to Casing
Shoe");
panel_6.add(label_3, "1, 12, 3, 1");

textField_22 = new JTextField();
panel_6.add(textField_22, "6, 12, 3, 1, fill, default");
textField_22.setColumns(10);

JLabel lblM = new JLabel("ft");
panel_6.add(lblM, "10, 12");

JLabel label_4 = new JLabel("Temperature Gradient");
panel_6.add(label_4, "1, 14");

textField_23 = new JTextField();
panel_6.add(textField_23, "6, 14, 3, 1, fill, default");
textField_23.setColumns(10);

JLabel lblfft = new JLabel("\u00BAF/100ft");
panel_6.add(lblfft, "10, 14");

JLabel label_5 = new JLabel("Fracture Pressure @ Casing Shoe");
panel_6.add(label_5, "1, 16");

textField_24 = new JTextField();
panel_6.add(textField_24, "6, 16, 3, 1, fill, default");
textField_24.setColumns(10);

JLabel lblPsi = new JLabel("psi");
panel_6.add(lblPsi, "10, 16");

JLabel label_6 = new JLabel("Fracture Gradient @ Total Depth");
panel_6.add(label_6, "1, 18");

textField_25 = new JTextField();
panel_6.add(textField_25, "6, 18, 3, 1, fill, default");
textField_25.setColumns(10);

JLabel lblPsi_1 = new JLabel("psi");
panel_6.add(lblPsi_1, "10, 18");

JLabel label_7 = new JLabel("Allowable Influx Height");
panel_6.add(label_7, "1, 20");

textField_26 = new JTextField();
panel_6.add(textField_26, "6, 20, 3, 1, fill, default");
textField_26.setColumns(10);

JLabel lblFtTvd = new JLabel("ft TVD");
panel_6.add(lblFtTvd, "10, 20");

JLabel label_8 = new JLabel("Lenght of Kick @ Casing Shoe");
panel_6.add(label_8, "1, 22");

textField_27 = new JTextField();
panel_6.add(textField_27, "6, 22, 3, 1, fill, default");
textField_27.setColumns(10);

JLabel lblMMd = new JLabel("ft MD");
panel_6.add(lblMMd, "10, 22");
```

```
JLabel label_9 = new JLabel("Lenght of Kick @ True Depth");
panel_6.add(label_9, "1, 24");

textField_28 = new JTextField();
panel_6.add(textField_28, "6, 24, 3, 1, fill, default");
textField_28.setColumns(10);

JLabel lblMMd_1 = new JLabel("ft MD");
panel_6.add(lblMMd_1, "10, 24");

JLabel label_10 = new JLabel("Kick Size on Shut in");
panel_6.add(label_10, "1, 26");

textField_29 = new JTextField();
panel_6.add(textField_29, "6, 26, 3, 1, fill, default");
textField_29.setColumns(10);

JLabel lblBbl_3 = new JLabel("bbl");
panel_6.add(lblBbl_3, "10, 26");

JLabel label_11 = new JLabel("Kick Size @ Shoe");
panel_6.add(label_11, "1, 28");

textField_30 = new JTextField();
panel_6.add(textField_30, "6, 28, 3, 1, fill, default");
textField_30.setColumns(10);

JLabel lblBbl_4 = new JLabel("bbl");
panel_6.add(lblBbl_4, "10, 28");

JLabel label_12 = new JLabel("Gas - Shoe Back to Total Depth");
panel_6.add(label_12, "1, 30");

textField_31 = new JTextField();
panel_6.add(textField_31, "6, 30, 3, 1, fill, default");
textField_31.setColumns(10);

JLabel lblBbl_5 = new JLabel("bbl");
panel_6.add(lblBbl_5, "10, 30");

JLabel label_13 = new JLabel("MAASP");
panel_6.add(label_13, "1, 32");

textField_32 = new JTextField();
panel_6.add(textField_32, "6, 32, 3, 1, fill, default");
textField_32.setColumns(10);

JLabel lblPsi_2 = new JLabel("psi");
panel_6.add(lblPsi_2, "10, 32");

textField_33 = new JTextField();
panel_6.add(textField_33, "1, 34, 8, 1, fill, default");
textField_33.setColumns(10);

JLabel lblNewLabel = new JLabel("Open Hole Depth");
lblNewLabel.setForeground(Color.RED);
lblNewLabel.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblMinKickTolerance = new JLabel("Min Open Hole Depth");
lblMinKickTolerance.setForeground(Color.RED);
lblMinKickTolerance.setFont(new Font("Lucida Grande", Font.BOLD, 14));

textField_16 = new JTextField();
textField_16.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
    }
})
```

```
});
textField_16.setColumns(10);

JLabel lblUnit_12 = new JLabel("ft");
lblUnit_12.setFont(new Font("Lucida Grande", Font.BOLD, 13));
lblUnit_12.setForeground(Color.RED);

JLabel lblCalculatedKickTolerance = new JLabel("Max. Open Hole
Depth:");
lblCalculatedKickTolerance.setForeground(Color.RED);
lblCalculatedKickTolerance.setFont(new Font("Lucida Grande",
Font.BOLD, 14));

textField_17 = new JTextField();
textField_17.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
    }
});
textField_17.setFont(new Font("Lucida Grande", Font.BOLD, 14));
textField_17.setForeground(Color.RED);
textField_17.setColumns(10);

JLabel lblUnit_13 = new JLabel("ft");
lblUnit_13.setForeground(Color.RED);
lblUnit_13.setFont(new Font("Lucida Grande", Font.BOLD, 13));
GroupLayout gl_panel_5 = new GroupLayout(panel_5);
gl_panel_5.setHorizontalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup())

    .addGroup(gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblMinKickTolerance)

            .addPreferredGap(ComponentPlacement.RELATED)
                .addComponent(textField_16,
GroupLayout.PREFERRED_SIZE, 124, GroupLayout.PREFERRED_SIZE)
                .addGap(18)
                .addComponent(lblUnit_12)
                .addGap(37)

            .addComponent(lblCalculatedKickTolerance)

            .addPreferredGap(ComponentPlacement.RELATED)
                .addComponent(textField_17,
GroupLayout.PREFERRED_SIZE, 122, GroupLayout.PREFERRED_SIZE)
                .addGap(6)
                .addComponent(lblUnit_13))
            .addGroup(gl_panel_5.createSequentialGroup()
                .addGap(322)
                .addComponent(lblNewLabel)))
        .addContainerGap(38, Short.MAX_VALUE))
    );
gl_panel_5.setVerticalGroup(
    gl_panel_5.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_5.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblNewLabel)
            .addGap(5)

            .addGroup(gl_panel_5.createParallelGroup(Alignment.BASELINE)
                .addComponent(lblMinKickTolerance)
                .addComponent(textField_16,
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
                .addComponent(lblUnit_12)
```

```
.addComponent(lblCalculatedKickTolerance)
.addComponent(textField_17,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
.addComponent(lblUnit_13))
.addContainerGap(12, Short.MAX_VALUE))
);
panel_5.setLayout(gl_panel_5);

JLabel lblSafetyDetails = new JLabel("SAFETY DETAILS");
lblSafetyDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblChokeLoss = new JLabel("Choke Loss:");
lblChokeLoss.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_14 = new JTextField();
textField_14.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Choke = Double.parseDouble(textField_14.getText());
    }
});
textField_14.setColumns(10);

JLabel lblSafetyMargin = new JLabel("Safety Margin:");
lblSafetyMargin.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblUnit_10 = new JLabel("psi");

textField_2 = new JTextField();
textField_2.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Smargin = Double.parseDouble(textField_2.getText());
    }
});
textField_2.setColumns(10);

JLabel lblUnit_11 = new JLabel("psi");
GroupLayout gl_panel_4 = new GroupLayout(panel_4);
gl_panel_4.setHorizontalGroup(
    gl_panel_4.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_4.createSequentialGroup())

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel_4.createSequentialGroup()
        .addGroup(gl_panel_4.createSequentialGroup()
            .addGap(112)
            .addComponent(lblSafetyDetails))
        .addGroup(gl_panel_4.createSequentialGroup()
            .addContainerGap()

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblChokeLoss)
    .addComponent(lblSafetyMargin))
    .addGap(46)

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING, false)
    .addComponent(textField_2, 0,
0, Short.MAX_VALUE)
    .addComponent(textField_14,
GroupLayout.DEFAULT_SIZE, 126, Short.MAX_VALUE))
    .addGap(18)

.addGroup(gl_panel_4.createParallelGroup(Alignment.LEADING)
    .addComponent(lblUnit_11)
    .addComponent(lblUnit_10)))
    .addGap(48)
);
```

```
gl_panel_4.setVerticalGroup(  
    gl_panel_4.createParallelGroup(Alignment.LEADING)  
        .addGroup(gl_panel_4.createSequentialGroup()  
            .addContainerGap()  
            .addComponent(lblSafetyDetails)  
            .addPreferredGap(ComponentPlacement.RELATED)  
        )  
    .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)  
        .addComponent(lblChokeLoss)  
        .addComponent(textField_14,  
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)  
        .addComponent(lblUnit_10)  
        .addPreferredGap(ComponentPlacement.RELATED)  
    )  
    .addGroup(gl_panel_4.createParallelGroup(Alignment.BASELINE)  
        .addComponent(lblSafetyMargin)  
        .addComponent(textField_2,  
GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)  
        .addComponent(lblUnit_11)  
        .addContainerGap(GroupLayout.DEFAULT_SIZE,  
Short.MAX_VALUE)  
    );  
panel_4.setLayout(gl_panel_4);  
  
JLabel lblPressureDetails = new JLabel("PRESSURE DETAILS");  
lblPressureDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));  
  
JLabel lblMudWeight = new JLabel("Mud Weight:");  
lblMudWeight.setFont(new Font("Lucida Grande", Font.PLAIN, 14));  
  
JLabel lblInfluxDensity = new JLabel("Influx Density:");  
lblInfluxDensity.setFont(new Font("Lucida Grande", Font.PLAIN, 14));  
  
JLabel lblPorePressure = new JLabel("Pore Pressure @ TD:");  
lblPorePressure.setFont(new Font("Lucida Grande", Font.PLAIN, 14));  
  
JLabel lblFractureGradient = new JLabel("Fracture Gradient @ Shoe:");  
lblFractureGradient.setFont(new Font("Lucida Grande", Font.PLAIN,  
14));  
  
JLabel lblTemperatureShoe = new JLabel("Temperature @ Shoe:");  
lblTemperatureShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));  
  
JLabel lblTemperatureTd = new JLabel("Temperature @ TD:");  
lblTemperatureTd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));  
  
textField_8 = new JTextField();  
textField_8.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Mweight = Double.parseDouble(textField_8.getText());  
    }  
});  
textField_8.setColumns(10);  
  
textField_9 = new JTextField();  
textField_9.addFocusListener(new FocusAdapter() {  
    @Override  
    public void focusLost(FocusEvent e) {  
        Influx = Double.parseDouble(textField_9.getText());  
    }  
});  
textField_9.setColumns(10);  
  
textField_10 = new JTextField();  
textField_10.addFocusListener(new FocusAdapter() {  
    @Override
```

```
        public void focusLost(FocusEvent e) {
            Ppres = Double.parseDouble(textField_10.getText());
        }
    });
    textField_10.setColumns(10);

    textField_11 = new JTextField();
    textField_11.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            Fgrad = Double.parseDouble(textField_11.getText());
        }
    });
    textField_11.setColumns(10);

    textField_12 = new JTextField();
    textField_12.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            Temps = Double.parseDouble(textField_12.getText());
        }
    });
    textField_12.setColumns(10);

    textField_13 = new JTextField();
    textField_13.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            Temptd = Double.parseDouble(textField_13.getText());
        }
    });
    textField_13.setColumns(10);

    JLabel lblUnit_6 = new JLabel("ppg");

    JLabel lblUnit_7 = new JLabel("ppg");

    JLabel lblUnit_8 = new JLabel("EMW -ppg");

    JLabel lblUnit_9 = new JLabel("EMW -ppg");

    JLabel lblunit = new JLabel("\u00BAF");

    JLabel lblunit_1 = new JLabel("\u00BAF");

    JLabel lblMinKickTolerance_1 = new JLabel("Min. Kick Tolerance:");
    lblMinKickTolerance_1.setFont(new Font("Lucida Grande", Font.PLAIN,
14));

    textField_18 = new JTextField();
    textField_18.addFocusListener(new FocusAdapter() {
        @Override
        public void focusLost(FocusEvent e) {
            MinKick = Double.parseDouble(textField_18.getText());
        }
    });
    textField_18.setColumns(10);

    JLabel lblUnit_14 = new JLabel("bbl");
    lblUnit_14.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
    GroupLayout gl_panel_3 = new GroupLayout(panel_3);
    gl_panel_3.setHorizontalGroup(
        gl_panel_3.createParallelGroup(Alignment.LEADING)
            .addGroup(
                gl_panel_3.createSequentialGroup()
                    .addContainerGap()

```

```
.addGroup(gl_panel_3.createSequentialGroup())
    .addComponent(lblMudWeight)
    .addGap(45)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

    .addComponent(lblPressureDetails)

    .addGroup(gl_panel_3.createSequentialGroup())
        .addGap(6)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

    .addComponent(textField_9, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

    .addComponent(textField_8, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

    .addComponent(textField_10, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)

    .addComponent(textField_11, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
88, GroupLayout.PREFERRED_SIZE)

    .addComponent(textField_12, Alignment.TRAILING, GroupLayout.PREFERRED_SIZE,
116, GroupLayout.PREFERRED_SIZE))
        .addGap(18)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)

    .addComponent(lblUnit_9)

    .addComponent(lblunit)

    .addComponent(lblUnit_8)

    .addComponent(lblUnit_7)

    .addComponent(lblUnit_6))))

    .addComponent(lblInfluxDensity)
    .addComponent(lblPorePressure)
    .addComponent(lblFractureGradient)
    .addComponent(lblTemperatureShoe)
    .addGroup(gl_panel_3.createSequentialGroup())

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addComponent(lblTemperatureTd)

    .addComponent(lblMinKickTolerance_1))

    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING, false)
        .addComponent(textField_18,
Alignment.TRAILING, 0, 0, Short.MAX_VALUE)
        .addComponent(textField_13,
Alignment.TRAILING, GroupLayout.DEFAULT_SIZE, 128, Short.MAX_VALUE))
        .addGap(18)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.LEADING)
        .addComponent(lblUnit_14)
        .addComponent(lblunit_1)))
        .addContainerGap(40, Short.MAX_VALUE)
    );
gl_panel_3.setVerticalGroup(
    gl_panel_3.createParallelGroup(Alignment.LEADING)
```



```
.addGroup(gl_panel_3.createSequentialGroup())
    .addContainerGap()
    .addComponent(lblPressureDetails)
    .addPreferredGap(ComponentPlacement.UNRELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblMudWeight)
        .addComponent(textField_8,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_6))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblInfluxDensity)
        .addComponent(textField_9,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_7))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblPorePressure)
        .addComponent(textField_10,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_8))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblFractureGradient)
        .addComponent(textField_11,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_9))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblTemperatureShoe)
        .addComponent(textField_12,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblunit))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblTemperatureTd)
        .addComponent(textField_13,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblunit_1))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_3.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblMinKickTolerance_1)
        .addComponent(textField_18,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_14))
    .addContainerGap(GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
);
panel_3.setLayout(gl_panel_3);

JLabel lblBhaLenght = new JLabel("BHA Lenght");
lblBhaLenght.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblStringDetails = new JLabel("STRING DETAILS");
lblStringDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

JLabel lblOd = new JLabel("BHA OD:");
lblOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillCollarLenght = new JLabel("Drill Collar Lenght:");
```

```
14));

lblDrillCollarLenght.setFont(new Font("Lucida Grande", Font.PLAIN,

JLabel lblOd_1 = new JLabel("Drill Collar OD:");
lblOd_1.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblDrillPipeOd = new JLabel("Drill Pipe OD:");
lblDrillPipeOd.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField_6 = new JTextField();
textField_6.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        BHA = Double.parseDouble(textField_6.getText());
    }
});
textField_6.setColumns(10);

String[] BHACombo={"", "9 1/2'", "8'", "6 1/2'", "4 3/4'", "3 1/2'"};
comboBox_2 = new JComboBox(BHACombo);
comboBox_2.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int a= comboBox_2.getSelectedIndex();
        BHASize= new double[] {0,9.5,8,6.5,4.75,3.5};
        BHAod= BHASize[a];

    }
});

textField_7 = new JTextField();
textField_7.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        DClenght = Double.parseDouble(textField_7.getText());
    }
});
textField_7.setColumns(10);

String[] Collar={"", "9 1/2'", "8 1/4'", "8'", "7 1/4'", "7'", "6
3/4'", "6 1/2'", "6 1/4'", "6'", "5'", "4 3/4'", "4 1/8'", "3 1/2'", "3 1/8'"};
comboBox_3 = new JComboBox(Collar);
comboBox_3.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int b= comboBox_3.getSelectedIndex();
        DCSize= new double[]
{0,9.5,8.25,8,7.25,7,6.75,6.5,6.25,6,5,4.75,4.125,3.5,3.125};
        DCod= DCSize[b];

    }
});

String[] Pipe={"", "6 5/8'", "5 1/2'", "5'", "4 1/2'", "4'", "3
1/2'", "2 7/8'", "2 3/8'"};
comboBox_4 = new JComboBox(Pipe);
comboBox_4.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {

        int c= comboBox_4.getSelectedIndex();
        DPSize= new double[]
{0,6.625,5.5,5,4.5,4,3.5,2.875,2.375};
        DPod= DPSize[c];

    }
});

JLabel lblUnit_4 = new JLabel("ft");
```

```
JLabel lblUnit_5 = new JLabel("ft");
lblUnit_5.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GroupLayout gl_panel_2 = new GroupLayout(panel_2);
gl_panel_2.setHorizontalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup())

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup())
            .addGap(116)
            .addComponent(lblStringDetails))
        .addGroup(gl_panel_2.createSequentialGroup())
            .addContainerGap()

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addComponent(lblBhaLenght)
        .addComponent(lblOd))
        .addGap(55)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
        .addComponent(comboBox_2, 0,
            GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(textField_6))
        .addGap(18)
        .addComponent(lblUnit_4))
        .addGroup(gl_panel_2.createSequentialGroup())
            .addContainerGap()

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)

    .addComponent(lblDrillCollarLenght)

        .addComponent(lblOd_1)
        .addComponent(lblDrillPipeOd))

    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING, false)
        .addComponent(comboBox_4, 0,
            GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(comboBox_3, 0,
            GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        .addComponent(textField_7))
        .addGap(18)
        .addComponent(lblUnit_5)))
        .addContainerGap(67, Short.MAX_VALUE))
);
gl_panel_2.setVerticalGroup(
    gl_panel_2.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_2.createSequentialGroup())
            .addContainerGap()
            .addComponent(lblStringDetails)
            .addGap(5)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblBhaLenght)
        .addComponent(textField_6,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_4))
        .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblOd)
        .addComponent(comboBox_2,
            GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(ComponentPlacement.RELATED)
```

```
.addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblDrillCollarLenght)
    .addComponent(textField_7,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblUnit_5))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblOd_1)
    .addComponent(comboBox_3,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
    .addPreferredGap(ComponentPlacement.RELATED)

    .addGroup(gl_panel_2.createParallelGroup(Alignment.LEADING)
    .addComponent(comboBox_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addComponent(lblDrillPipeOd))
    .addContainerGap(11, Short.MAX_VALUE)

);
panel_2.setLayout(gl_panel_2);

JLabel lblHoleSize = new JLabel("Hole Size:");
lblHoleSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

String[] Hole={"", "36'", "33'", "32 3/8'", "32
1/4'", "32'", "31'", "28'", "26'", "24'", "23 1/2'", "23'", "22'", "21
3/4'", "20'", "19 1/4'", "18 1/2'", "18 1/8'", "17 1/2'", "17'", "16'", "15
1/2'", "15'", "14 3/4'", "14 1/2'", "13 3/4'", "13 1/2'", "12 1/4'", "12'", "11
5/8'", "10 5/8'", "9 7/8'", "9 1/2'", "8 3/4'", "8 5/8'", "8 1/2'", "8 3/8'", "7
7/8'", "7'", "6 3/4'", "6 1/2'", "6 1/4'", "6 1/8'", "6'", "5 7/8'", "5 5/8'", "5
1/2'", "5'", "4 7/8'", "4 3/4'", "4 5/8'", "4 1/2'", "4 1/8'", "3 7/8'", "3
3/4'"};

comboBox_1 = new JComboBox(Hole);
comboBox_1.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        int d= comboBox_1.getSelectedIndex();
        HoleSize= new double[]
{0.0,36,33,32.375,32.25,32,31,28,26,24,23.5,23,22,21.75,20,19.25,18.5,18.125,17.5,1
7,16,15.5,15,14.75,14.5,13.75,13.5,12.25,12,11.625,10.625,9.875,9.5,8.75,8.625,8.5,
8.375,7.875,7,6.75,6.5,6.25,6.125,6,5.875,5.625,5.5,5,4.875,4.75,4.625,4.5,4.125,3.
875,3.75};

        Hsize= HoleSize[d];

    }

});

JLabel lblHoleDetails = new JLabel("HOLE DETAILS");
lblHoleDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));
GroupLayout gl_panel_1 = new GroupLayout(panel_1);
gl_panel_1.setHorizontalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblHoleSize)
            .addGap(65)

        .addGroup(gl_panel_1.createParallelGroup(Alignment.LEADING)
            .addComponent(lblHoleDetails)
            .addComponent(comboBox_1,
 GroupLayout.PREFERRED_SIZE, 136, GroupLayout.PREFERRED_SIZE))
            .addContainerGap(101, Short.MAX_VALUE))
);
gl_panel_1.setVerticalGroup(
    gl_panel_1.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel_1.createSequentialGroup()
            .addGap(7)
            .addComponent(lblHoleDetails)
```

```
.addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel_1.createParallelGroup(Alignment.BASELINE)
    .addComponent(lblHoleSize)
    .addComponent(comboBox_1,
        GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE))
.addContainerGap(GroupLayout.DEFAULT_SIZE,
    Short.MAX_VALUE)
);
panel_1.setLayout(gl_panel_1);

JLabel lblCasingSize = new JLabel("Casing Size:");
lblCasingSize.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblCasingDetails = new JLabel("CASING DETAILS");
lblCasingDetails.setFont(new Font("Lucida Grande", Font.BOLD, 16));

String[] casing={"", "4 1/2'", "5'", "5 1/2'", "6 5/8'", "7'", "7
5/8'", "8 5/8'", "9 5/8'", "10 3/4'", "11 3/4'", "13 3/8'", "16'", "18
5/8'", "20'"};
comboBox = new JComboBox(casing);
comboBox.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent arg0) {

        int e=comboBox.getSelectedIndex();
        internals = new double[]
{0,4.09,4.56,5.012,6.049,6.538,7.125,8.097,9.063,10.192,11.084,12.715,15.25,17.755,
19.124};

        Csize = internals[e];

    }
});

JLabel lblMeasuredDepth = new JLabel("Measured Depth:");
lblMeasuredDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblTvDepth = new JLabel("TV Depth:");
lblTvDepth.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

JLabel lblAngleShoe = new JLabel("Angle @ Shoe:");
lblAngleShoe.setFont(new Font("Lucida Grande", Font.PLAIN, 14));

textField = new JTextField();
textField.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cmdepth = Double.parseDouble(textField.getText());
    }
});
textField.setColumns(10);

textField_1 = new JTextField();
textField_1.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Cashoe = Double.parseDouble(textField_1.getText());
    }
});
textField_1.setColumns(10);

textField_4 = new JTextField();
textField_4.addFocusListener(new FocusAdapter() {
    @Override
    public void focusLost(FocusEvent e) {
        Ctvdepth = Double.parseDouble(textField_4.getText());
    }
});
});
```

```
textField_4.setColumns(10);

JLabel lblUnit = new JLabel("ft");

JLabel lblUnit_1 = new JLabel("Deg (\u00BA)");

JLabel lblUnit_2 = new JLabel("ft");
lblUnit_2.setFont(new Font("Lucida Grande", Font.PLAIN, 13));
GridLayout gl_panel = new GroupLayout(panel);
gl_panel.setHorizontalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addGroup(gl_panel.createSequentialGroup())
        .addContainerGap()

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
    .addComponent(lblCasingSize)
    .addComponent(lblMeasuredDepth)
    .addComponent(lblTvDepth)
    .addComponent(lblAngleShoe))
    .addGap(18)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_1, GroupLayout.PREFERRED_SIZE,
GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
    .addGap(18)

.addComponent(lblUnit_1))

.addGroup(gl_panel.createSequentialGroup())

.addPreferredGap(ComponentPlacement.RELATED)

.addComponent(textField_4, GroupLayout.PREFERRED_SIZE, 134,
GroupLayout.PREFERRED_SIZE)
    .addGap(18)

.addComponent(lblUnit_2))

.addGroup(gl_panel.createSequentialGroup())

.addGroup(gl_panel.createParallelGroup(Alignment.TRAILING, false)

.addComponent(comboBox, Alignment.LEADING, 0, GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

.addComponent(textField, Alignment.LEADING)
    .addGap(18)

.addComponent(lblUnit)))

    .addGroup(gl_panel.createSequentialGroup())
        .addGap(109)
        .addComponent(lblCasingDetails))
    .addContainerGap(36, Short.MAX_VALUE)
);
gl_panel.setVerticalGroup(
    gl_panel.createParallelGroup(Alignment.LEADING)
        .addGroup(gl_panel.createSequentialGroup())
            .addContainerGap()
            .addComponent(lblCasingDetails)
```

```
.addGap(3)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
        .addComponent(lblCasingSize)
        .addComponent(comboBox,
 GroupLayout.PREFERRED_SIZE, 33, GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
        .addComponent(textField,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit))
        .addComponent(lblMeasuredDepth))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
        .addComponent(lblTvDepth)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
        .addComponent(textField_4,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_2)))
        .addPreferredGap(ComponentPlacement.RELATED)

.addGroup(gl_panel.createParallelGroup(Alignment.LEADING)
        .addComponent(lblAngleShoe)

.addGroup(gl_panel.createParallelGroup(Alignment.BASELINE)
        .addComponent(textField_1,
 GroupLayout.PREFERRED_SIZE, GroupLayout.DEFAULT_SIZE, GroupLayout.PREFERRED_SIZE)
        .addComponent(lblUnit_1)))
        .addContainerGap()
);
panel.setLayout(gl_panel);
getContentPane().setLayout(groupLayout);
}
}
```

F.8 Ad_Kick_US.java

```
package kick.views;

import java.awt.EventQueue;
import javax.swing.JInternalFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;
import java.awt.Font;
import com.jgoodies.forms.layout.FormLayout;
import com.jgoodies.forms.layout.ColumnSpec;
import com.jgoodies.forms.layout.RowSpec;
import com.jgoodies.forms.factories.FormFactory;

public class Ad_Kick1_US extends JInternalFrame {
    /**
     *
     */
    private static final long serialVersionUID = 1L;
    private JLabel lblCapacity;
    private JLabel lblOpenHole;
    private JLabel lblOpenHole_1;
    private JLabel lblCasingDrill;
    private JLabel lblAnnular;
    private JTextField textField;
    private JTextField textField_1;
```

```
private JLabel lblVolume;
private JTextField textField_2;
private JTextField textField_3;
private JTextField textField_4;
private JTextField textField_5;
private JLabel lblM;
private JLabel lblM_1;
private JLabel lblM_2;
private JLabel lblLm;
private JLabel lblLm_1;
private JLabel lblLm_2;
private JLabel lblDistanceTopDrill;
private JTextField textField_6;
private JLabel lblM_3;
private JLabel lblFracturePressure;
private JLabel lblCasingShoe;
private JLabel lblNewLabel;
private JLabel lblTemperatureGradient;
private JTextField textField_7;
private JTextField textField_8;
private JTextField textField_9;
private JLabel lblBar;
private JLabel lblNewLabel_1;
private JLabel lblcm;
private JLabel lblInputCheck;
private JLabel lblComments;
private JTextField textField_10;
private JTextField textField_11;

/**
 * Launch the application.
 */
public static void main(String[] args) {
    EventQueue.invokeLater(new Runnable() {
        public void run() {
            try {
                Ad_Kick1_US frame = new Ad_Kick1_US();
                frame.setVisible(true);
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    });
}

/**
 * Create the frame.
 */
public Ad_Kick1_US() {
    setTitle("Extra Information");
    setBounds(100, 100, 450, 600);
    getContentPane().setLayout(new FormLayout(new ColumnSpec[] {
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.DEFAULT_COLSPEC,
        ColumnSpec.decode("default:grow"),
        FormFactory.RELATED_GAP_COLSPEC,
        FormFactory.RELATED_GAP_COLSPEC,
```


[illegible]

```
lblCapacity = new JLabel("Capacity");
lblCapacity.setFont(new Font("Lucida Grande", Font.BOLD, 13));
```

```
getContentPane().add(lblCapacity, "4, 2");

lblAnnular = new JLabel("Annular ");
lblAnnular.setFont(new Font("Lucida Grande", Font.BOLD, 13));
getContentPane().add(lblAnnular, "10, 2");

lblVolume = new JLabel("Volume");
lblVolume.setFont(new Font("Lucida Grande", Font.BOLD, 13));
getContentPane().add(lblVolume, "10, 4");

lblOpenHole = new JLabel("Open Hole - Drill Collar");
getContentPane().add(lblOpenHole, "2, 6");

textField = new JTextField();
getContentPane().add(textField, "4, 6, fill, default");
textField.setColumns(10);

lblLm = new JLabel("bbl/ft");
getContentPane().add(lblLm, "5, 6");

textField_1 = new JTextField();
getContentPane().add(textField_1, "10, 6, fill, default");
textField_1.setColumns(10);

lblM = new JLabel("bbl");
getContentPane().add(lblM, "12, 6");

lblOpenHole_1 = new JLabel("Open Hole - Drill Pipe");
getContentPane().add(lblOpenHole_1, "2, 8");

textField_2 = new JTextField();
getContentPane().add(textField_2, "4, 8, fill, default");
textField_2.setColumns(10);

lblLm_1 = new JLabel("bbl/ft");
getContentPane().add(lblLm_1, "5, 8");

textField_3 = new JTextField();
getContentPane().add(textField_3, "10, 8, fill, default");
textField_3.setColumns(10);

lblM_1 = new JLabel("bbl");
getContentPane().add(lblM_1, "12, 8");

lblCasingDrill = new JLabel("Casing - Drill Pipe");
getContentPane().add(lblCasingDrill, "2, 10");

textField_4 = new JTextField();
getContentPane().add(textField_4, "4, 10, fill, default");
textField_4.setColumns(10);

lblLm_2 = new JLabel("bbl/ft");
getContentPane().add(lblLm_2, "5, 10");

textField_5 = new JTextField();
getContentPane().add(textField_5, "10, 10, fill, default");
textField_5.setColumns(10);

lblM_2 = new JLabel("bbl");
getContentPane().add(lblM_2, "12, 10");

lblDistanceTopDrill = new JLabel("Distance top Drill Collar to Casing  
Shoe");
getContentPane().add(lblDistanceTopDrill, "2, 12, 9, 1");

textField_6 = new JTextField();
getContentPane().add(textField_6, "10, 12, fill, default");
```

```
textField_6.setColumns(10);

lblM_3 = new JLabel("ft");
getContentPane().add(lblM_3, "12, 12");

lblFracturePressure = new JLabel("Fracture Pressure:");
lblFracturePressure.setFont(new Font("Lucida Grande", Font.BOLD, 13));
getContentPane().add(lblFracturePressure, "2, 14");

lblCasingShoe = new JLabel("@ Casing Shoe");
getContentPane().add(lblCasingShoe, "2, 16");

textField_7 = new JTextField();
getContentPane().add(textField_7, "10, 16, fill, default");
textField_7.setColumns(10);

lblBar = new JLabel("psi");
getContentPane().add(lblBar, "12, 16");

lblNewLabel = new JLabel("@ Total Depth");
getContentPane().add(lblNewLabel, "2, 18");

textField_8 = new JTextField();
getContentPane().add(textField_8, "10, 18, fill, default");
textField_8.setColumns(10);

lblNewLabel_1 = new JLabel("psi");
getContentPane().add(lblNewLabel_1, "12, 18");

lblTemperatureGradient = new JLabel("Temperature Gradient");
getContentPane().add(lblTemperatureGradient, "2, 20");

textField_9 = new JTextField();
getContentPane().add(textField_9, "10, 20, fill, default");
textField_9.setColumns(10);

lblcm = new JLabel("\u00BAF/100ft");
getContentPane().add(lblcm, "12, 20");

lblInputCheck = new JLabel("Input Check:");
lblInputCheck.setFont(new Font("Lucida Grande", Font.BOLD, 13));
getContentPane().add(lblInputCheck, "2, 22");

textField_10 = new JTextField();
getContentPane().add(textField_10, "2, 24, 11, 9, fill, default");
textField_10.setColumns(10);

lblComments = new JLabel("Comments:");
lblComments.setFont(new Font("Lucida Grande", Font.BOLD, 13));
getContentPane().add(lblComments, "2, 34");

textField_11 = new JTextField();
getContentPane().add(textField_11, "2, 36, 11, 9, fill, default");
textField_11.setColumns(10);
    }
}
```

F.9 Notifications.java

```
package kick.views;

import java.awt.BorderLayout;

public class Notificacions extends JDialog {

    /**
```

```
*
*/
private static final long serialVersionUID = 1L;
private final JPanel contentPanel = new JPanel();

/**
 * Launch the application.
 */
public static void main(String[] args) {
    try {
        Notificacions dialog = new Notificacions();
        dialog.setDefaultCloseOperation(JDialog.DISPOSE_ON_CLOSE);
        dialog.setVisible(true);
    } catch (Exception e) {
        e.printStackTrace();
    }
}

/**
 * Create the dialog.
 */
public Notificacions() {
    setBounds(100, 100, 350, 100);
    getContentPane().setLayout(new BorderLayout());
    contentPanel.setBorder(new EmptyBorder(5, 5, 5, 5));
    getContentPane().add(contentPanel, BorderLayout.CENTER);

    GroupLayout gl_contentPanel = new GroupLayout(contentPanel);
    gl_contentPanel.setHorizontalGroup(
        gl_contentPanel.createParallelGroup(Alignment.LEADING)
            .addGroup(gl_contentPanel.createSequentialGroup()
                .addGap(85)
                .addContainerGap(87, Short.MAX_VALUE))
    );
    gl_contentPanel.setVerticalGroup(
        gl_contentPanel.createParallelGroup(Alignment.LEADING)
            .addGroup(Alignment.TRAILING,
                gl_contentPanel.createSequentialGroup()
                    .addContainerGap(31, Short.MAX_VALUE)
                    .addGap(27))
    );
    contentPanel.setLayout(gl_contentPanel);
    {
        JPanel buttonPane = new JPanel();
        buttonPane.setLayout(new FlowLayout(FlowLayout.RIGHT));
        getContentPane().add(buttonPane, BorderLayout.SOUTH);
        {
            JButton okButton = new JButton("OK");
            okButton.addActionListener(new ActionListener() {
                public void actionPerformed(ActionEvent e) {
                    dispose();
                }
            });
            okButton.setFont(new Font("Lucida Grande", Font.PLAIN,
18));
            okButton.setActionCommand("OK");
            buttonPane.add(okButton);
            getRootPane().setDefaultButton(okButton);
        }
    }
}
```