# A Simple Introduction to Our Implementation

This demo of our interface design is implemented using javascript and espacially d3.js. We wrote several HTML files and javascript files to show our ideas visually.

To use this demo, please at first open the file named conceptMapResp.html using your explorer. Chrome is recommended, and it also works well with the latest version of IE. However, we have neither tested it with Firefox, nor with Safari.

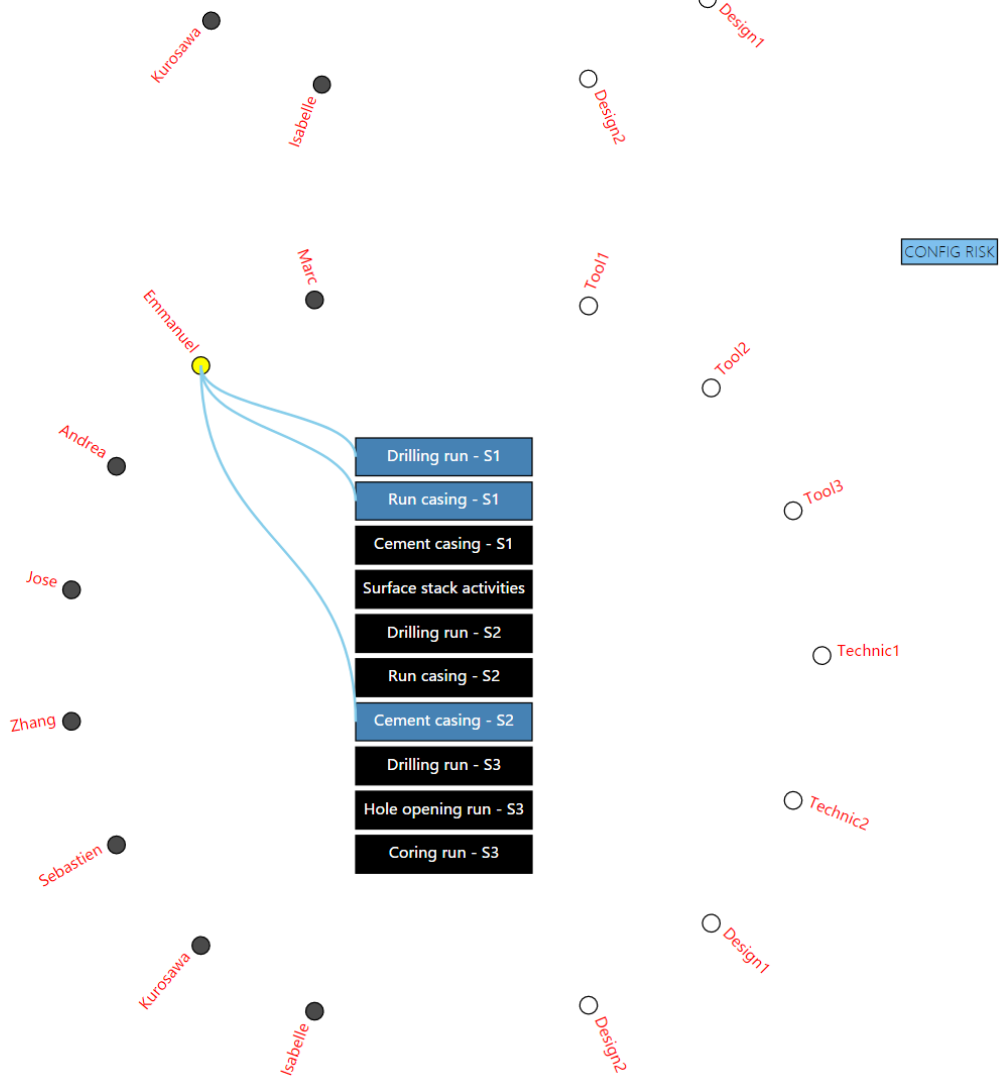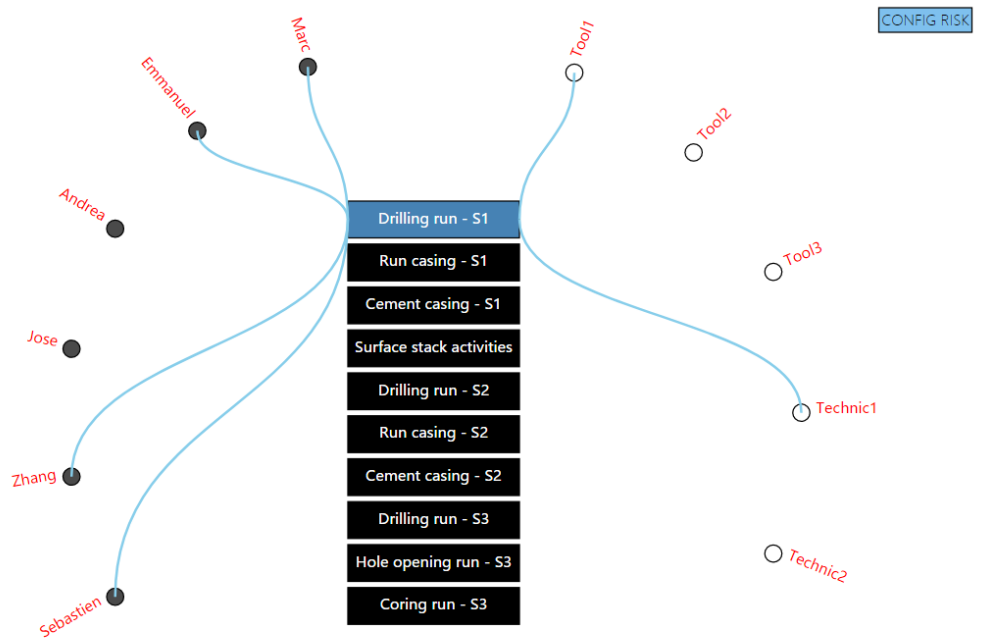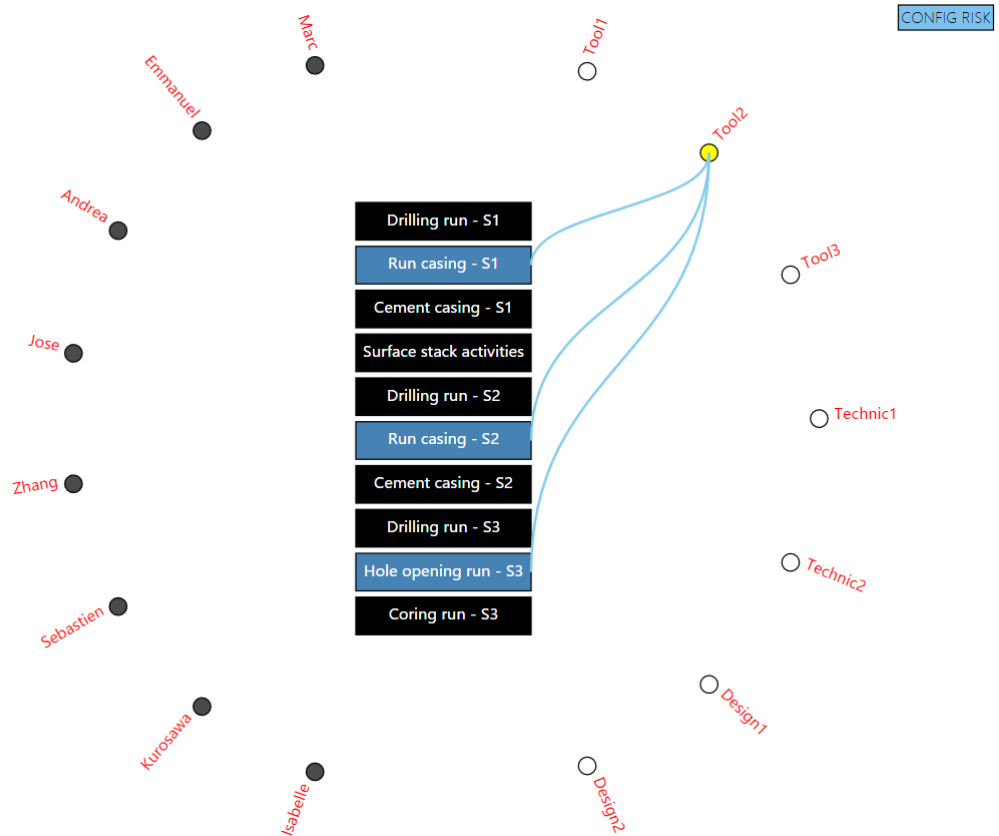Once you've done this, you will see something like the picture below.
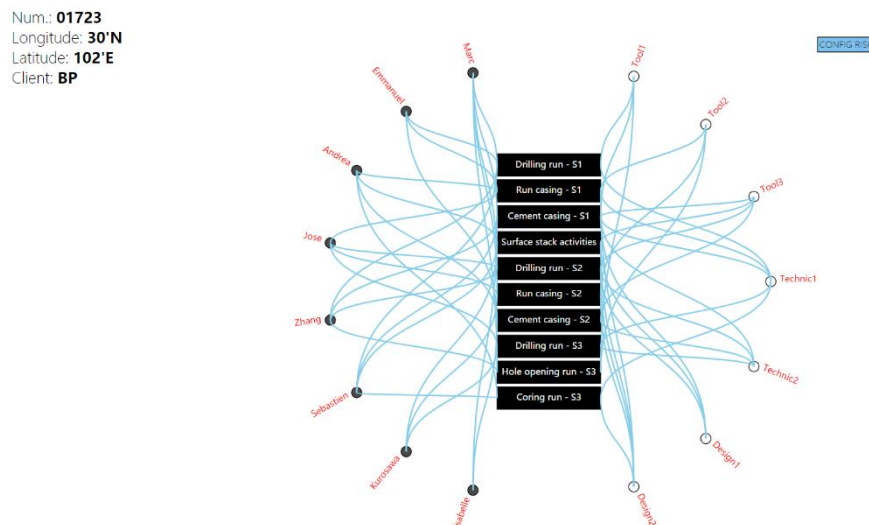
We call this the Ganoderma diagram.

The geographical position, client, and some other information at the top-left corner are related to the well.

Those black rectangles represent the activity plan of the drilling program. The names of different activities are written on these rectangles respectively. These rectangles are arranged in the order of time from top to bottom.

Those dark and small circles on the left represent all the engineers working in this program. And those light ones on the right represent all the tools, technics and designs used in the program. And they are all connected to their related activities by the curves between those rectangles and themselves. By placing the cursor on a rectangle or a circle, the corresponding connections will be visualized by the curves.

CONFIG RISK

Marc
Emmanuel
Andrea
Jose
Zhang
Sebastien
Kurosawa
Isabelle

Tool1
Tool2
Tool3
Technic1
Technic2
Design1
Design2

Drilling run - S1
Run casing - S1
Cement casing - S1
Surface stack activities
Drilling run - S2
Run casing - S2
Cement casing - S2
Drilling run - S3
Hole opening run - S3
Coring run - S3

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Coring run - S3

By clicking the button at the top-right corner, we can change this configuration into a risk-related configuration.
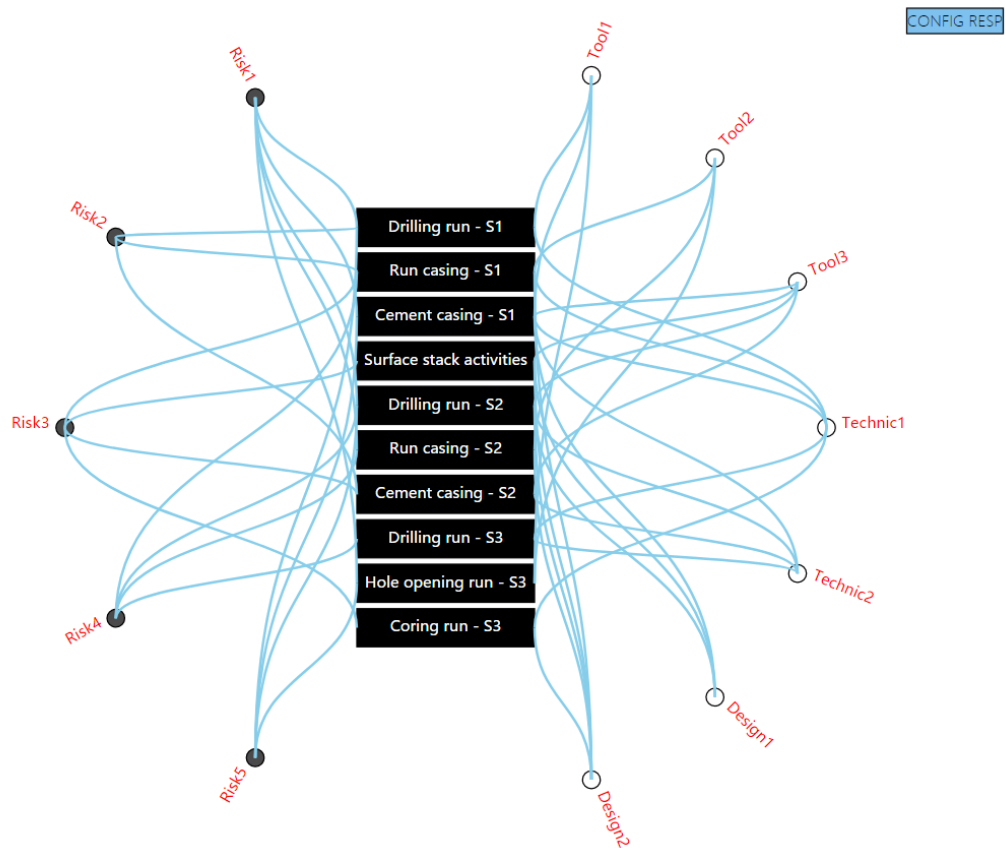
In this configuration those circles on the left represent five kinds of common risks that might happen during this drilling program.
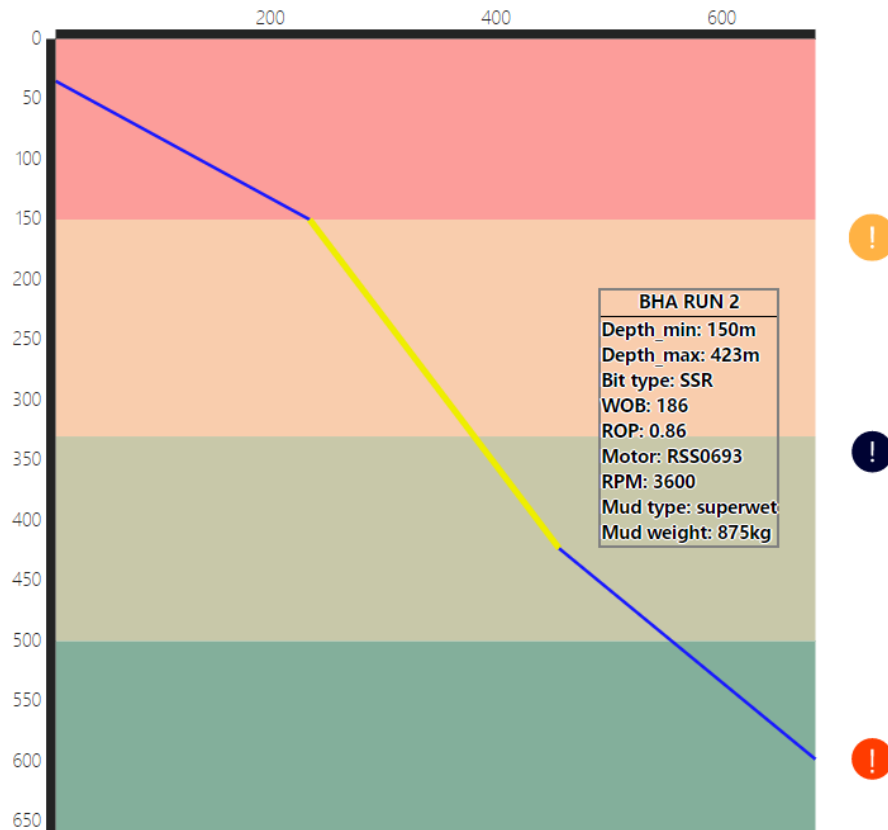
By clicking on a rectangle, a new window will be openned, which shows the detailed information of the corresponding activity. Let's take the first activity "Drilling run – S1" as an example. Here "S1" means section 1.

DRILLING SECTION 1
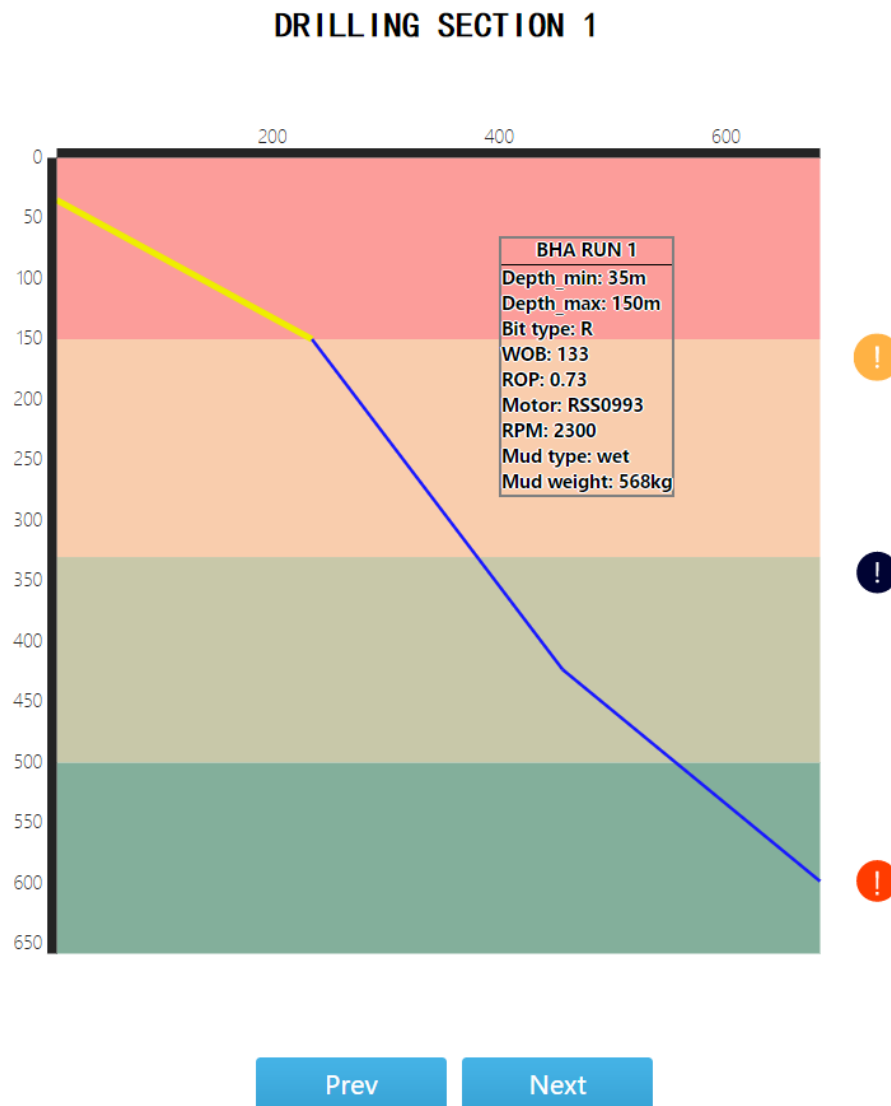
The picture above is what you'll see after you click the first rectangle. Here we use a 2D coordinate system to show the geography information of the well. The vertical axis represents the depth. Those rectangular areas of different colors in the background represent different kinds of geologic informations. The blue zigzag line represents the trajectory of the well.

Each drilling section have different BHA runs. When you move the cursor on the retangular area defined by these two axis, according to the vertical position of the cursor, the corresponding part of the trajectory will be lightened in yellow, and its BHA run informations will be diaplayed in a toolbox which moves along with your cursor.

DRILLING SECTION 1

BHA RUN 2
Depth_min: 150m
Depth_max: 423m
Bit type: SSR
WOB: 186
ROP: 0.86
Motor: RSS0693
RPM: 3600
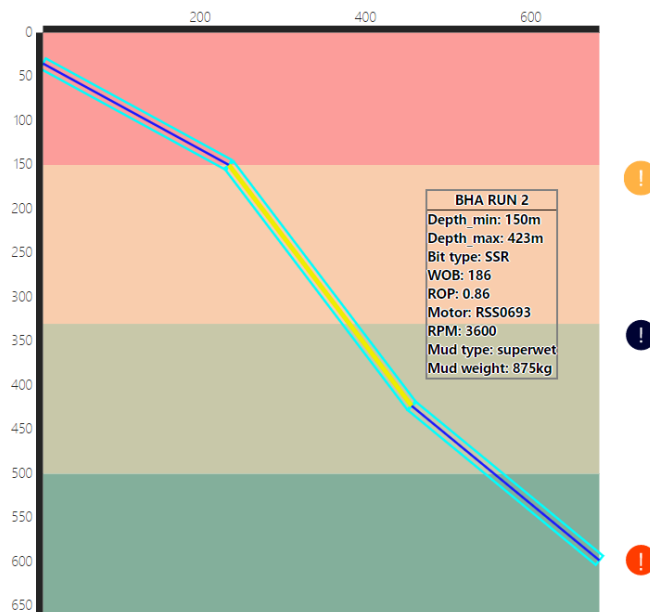Mud type: superwet
Mud weight: 875kg

Prev   Next

You can use these two buttons above to switch to the next activity or the previous one, thus you don't have to reclick those rectangles on the Ganoderma Diagram page.

The picture below shows what you will see after you clicked the "Next" button. It shows the casing information of Section 1.
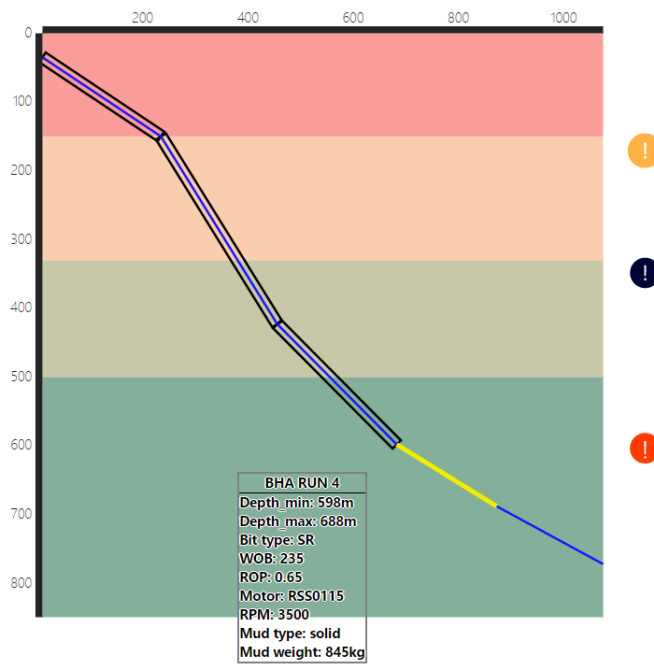
CASING SECTION 1

BHA RUN 2
Depth_min: 150m
Depth_max: 423m
Bit type: SSR
WOB: 186
ROP: 0.86
Motor: RSS0693
RPM: 3600
Mud type: superwet
Mud weight: 875kg

[Prev] [Next]

Keep clicking the "Next" button and we'll see the pictures as follow.

DRILLING SECTION 2

BHA RUN 4
Depth_min: 598m
Depth_max: 688m
Bit type: SR
WOB: 235
ROP: 0.65
Motor: RSS0115
RPM: 3500
Mud type: solid
Mud weight: 845kg

[Prev] [Next]
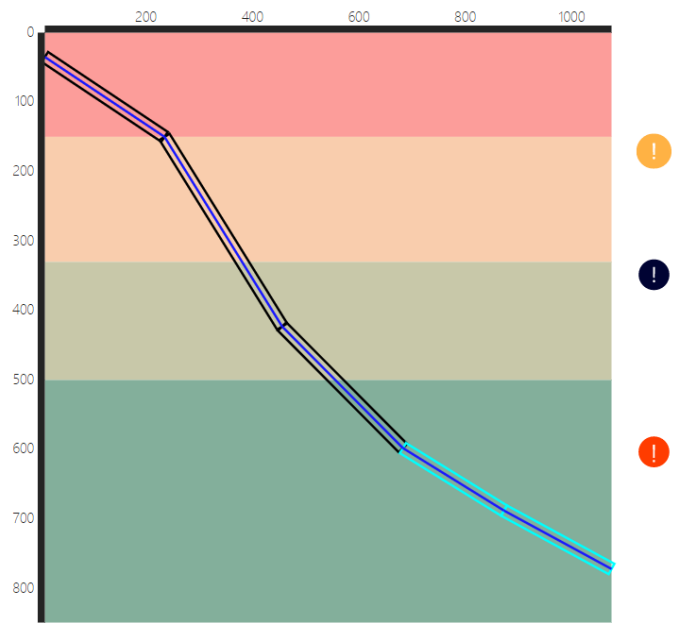
CASING SECTION 2

Prev Next

DRILLING SECTION 3

BHA RUN 6
Depth_min: 772m
Depth_max: 900m
Bit type: SSR
WOB: 117
ROP: 0.79
Motor: RSS0776
RPM: 4500
Mud type: solid
Mud weight: 1025kg
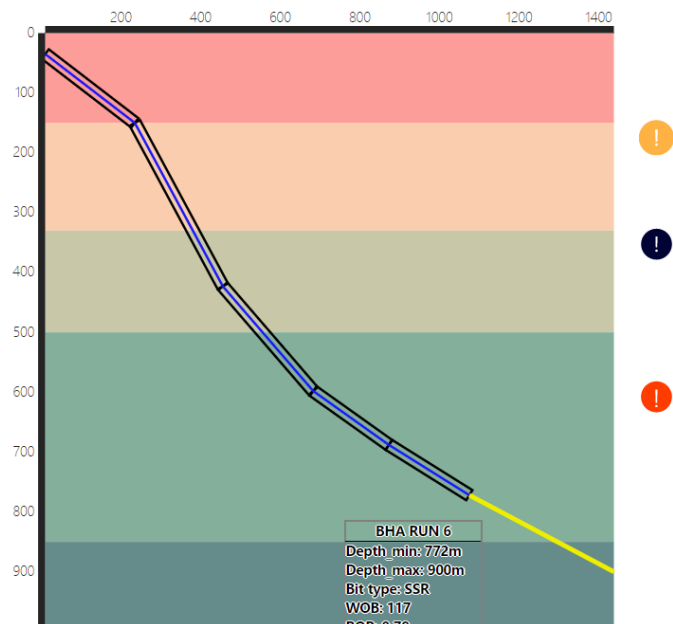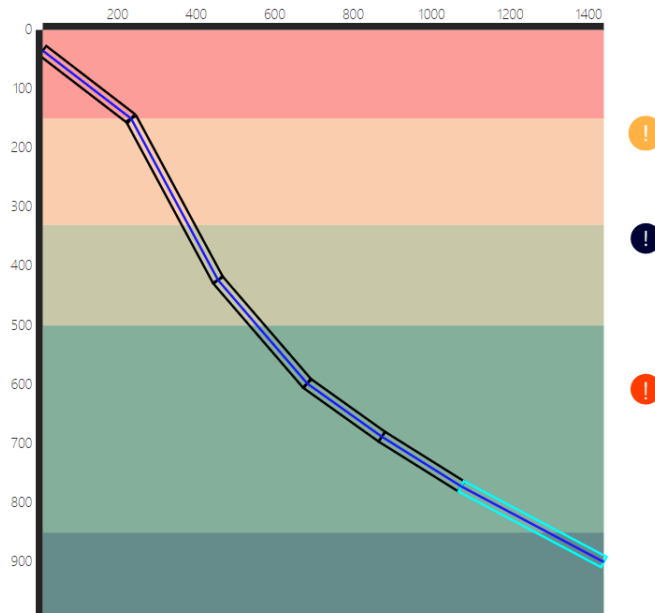
Prev Next

CASING SECTION 3

[Prev] [Next]

Please pay attention to those three circles with an exclamation mark inside. They show the risks that might happen in this section. Their vertical position in the coordinate system tells us the depth of the risk, and their color tells us how bad the risk could be.
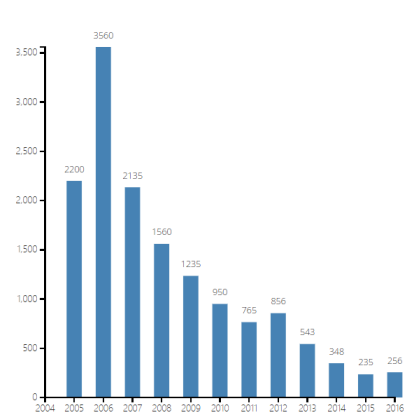
By clicking on one of these circles, a new window showing more detailed information about the risk will be opened.

Risk Num.0023

Depth: 145m, Type: 2
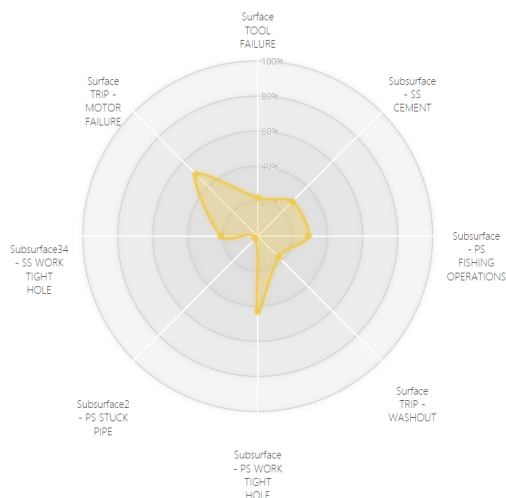
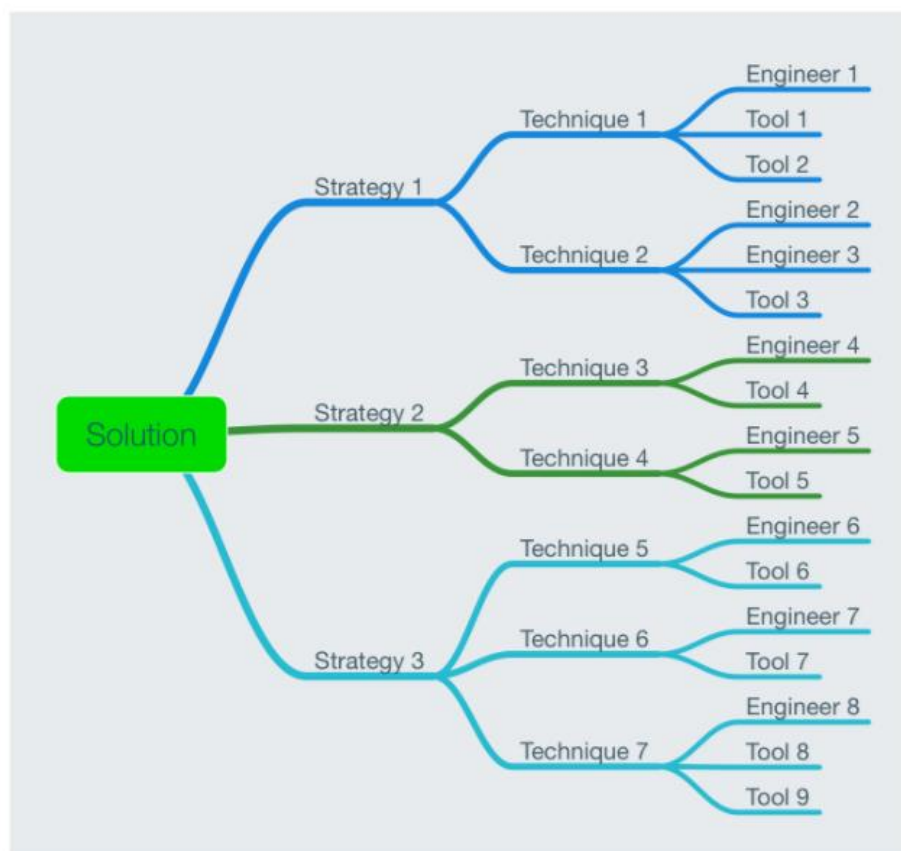Historical Losses Caused by this Type of Risk (1000 dollars)

The picture above appears after you click the first circle. The radar chart on the left displays

all the possible elements that might have contributed to this risk and their corresponding possibility. The histogram on the right displays the historical losses caused by the same type of risks.

A decision tree below is also attached to these two charts, which intends to provide possible solutions and strategies to this type of risk. However, we need more time to finish this part so by now we just use a picture to represent it here.

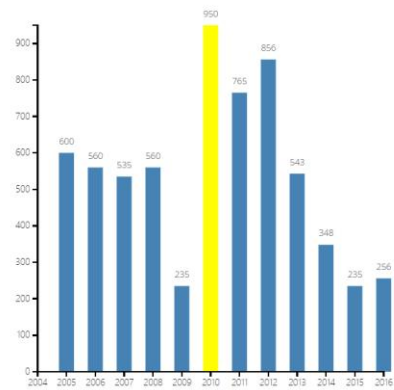
Possible Strategies for this Type of Risk

Below are the corresponding charts of the other two risks. We can see that those bars in the histogram can be lightened by placing the cursor on it.

Risk Num.0039
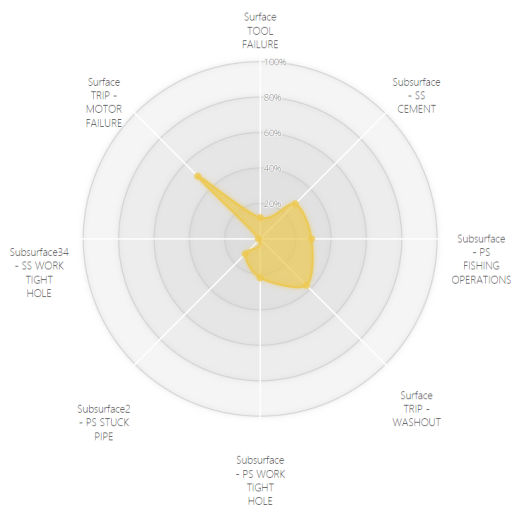
Depth: 323m, Type: 1

Historical Losses Caused by this Type of Risk (1000 dollars)
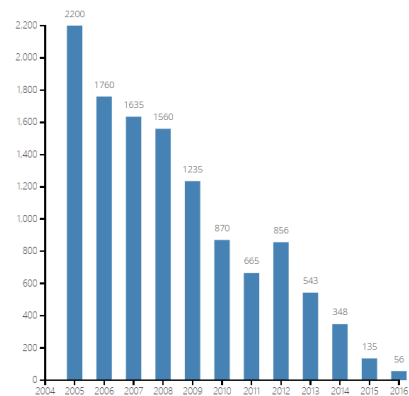
Risk Num.0052

Depth: 578m, Type: 5

Historical Losses Caused by this Type of Risk (1000 dollars)

Jun. 4, 2017

Reference

http://www.findtheconversation.com/concept-map/

https://www.visualcinnamon.com/2015/10/different-look-d3-radar-chart.html