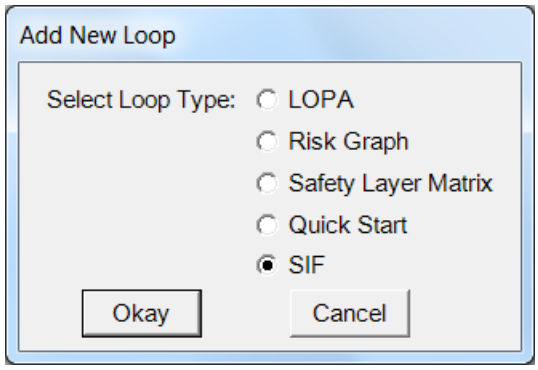
1. Risk Graph Analysis

1.1. Risk Graph – Loop Creation

SafeGuard Profiler™ facilitates SIL determination using the risk graph method. The structure of the risk graph and the set of variables used are contained in the project configuration file.

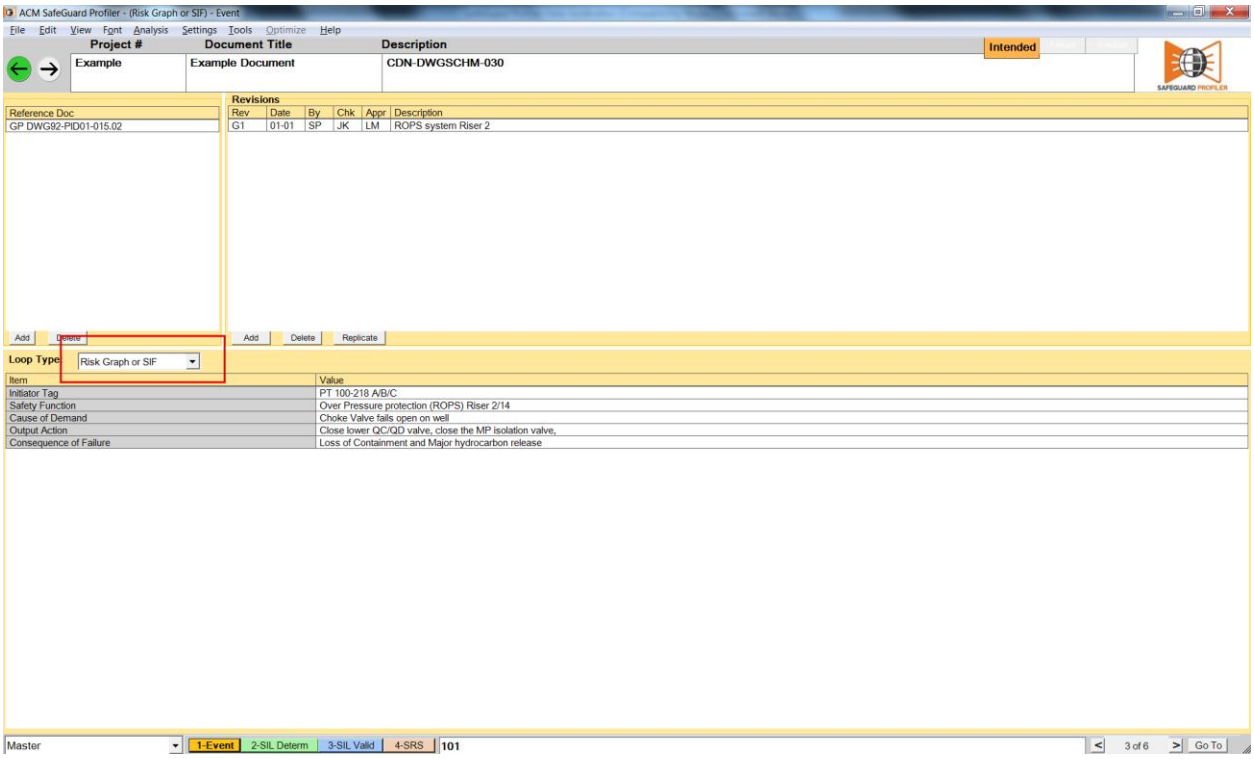
Open a project and select “Edit > Insert New Loop” from the top menu.



Select “SIF” and click OK.

On the Event page, ensure “Loop Type” is set to “Risk Graph or SIF” for the current loop.

Fill in the necessary fields.

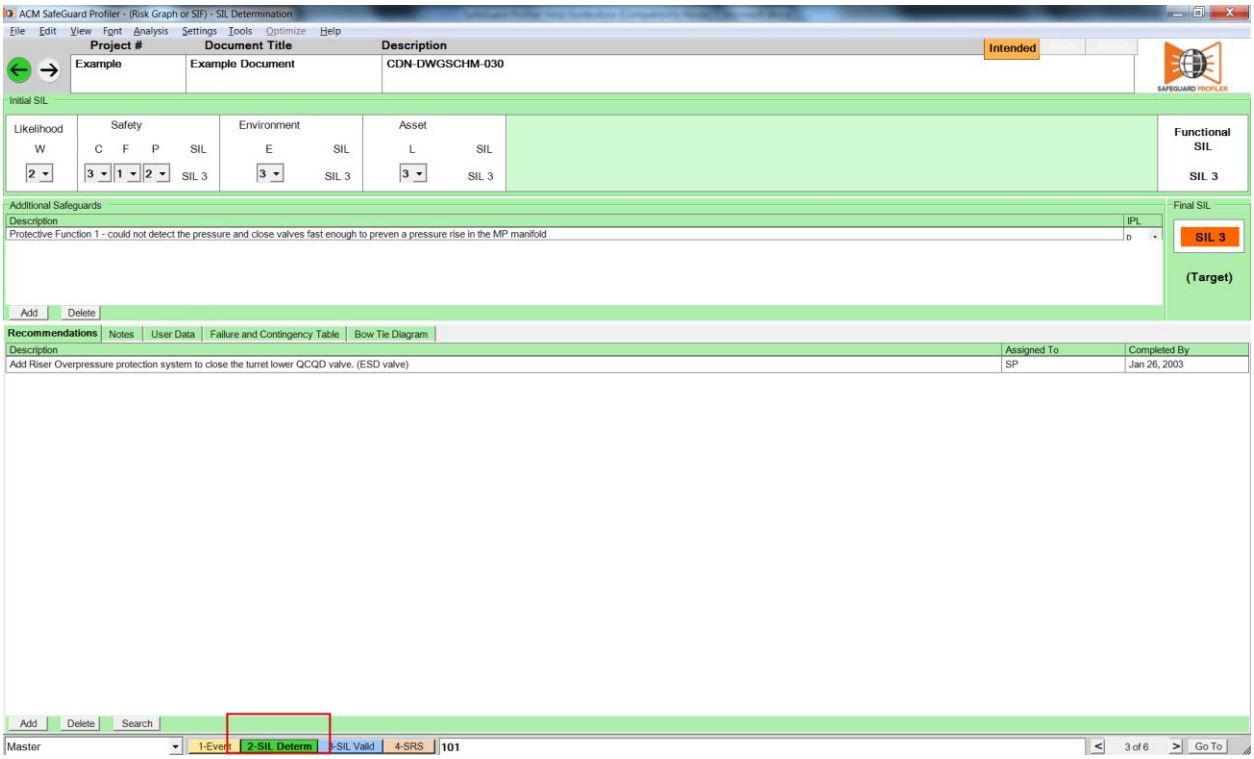


The new loop is now ready for SIL determination by risk graph.

1.2. Risk Graph – SIL Determination

Select a Risk Graph loop in the current project.

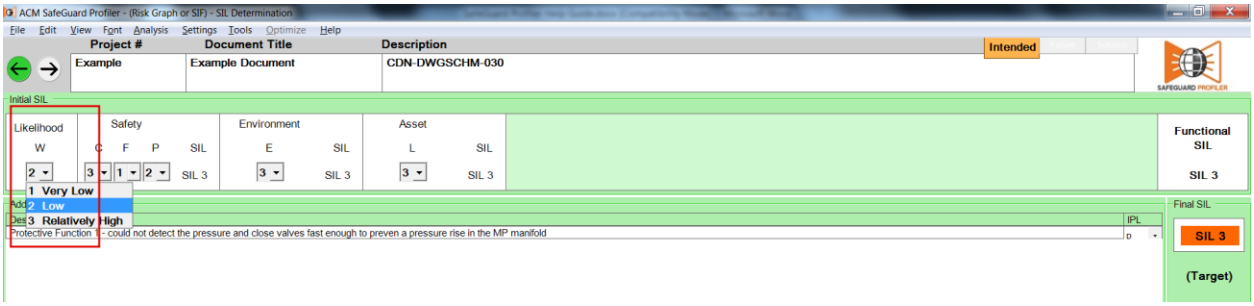
Click "2-SIL Determ" at the bottom of the page to view the SIL Determination page.



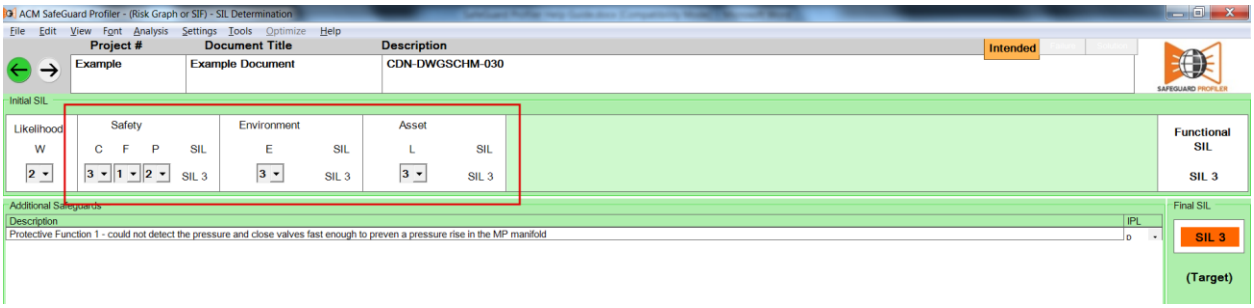
1.3. Risk Graph Variable Selection

On the SIL D page, select the “Likelihood” dropdown list.

Likelihood values can be customized in the project configuration file.



Next, set the dropdown values for Safety, Environment and Asset. The text and likelihood values for these Hazard Categories can also be customized in the project configuration file.



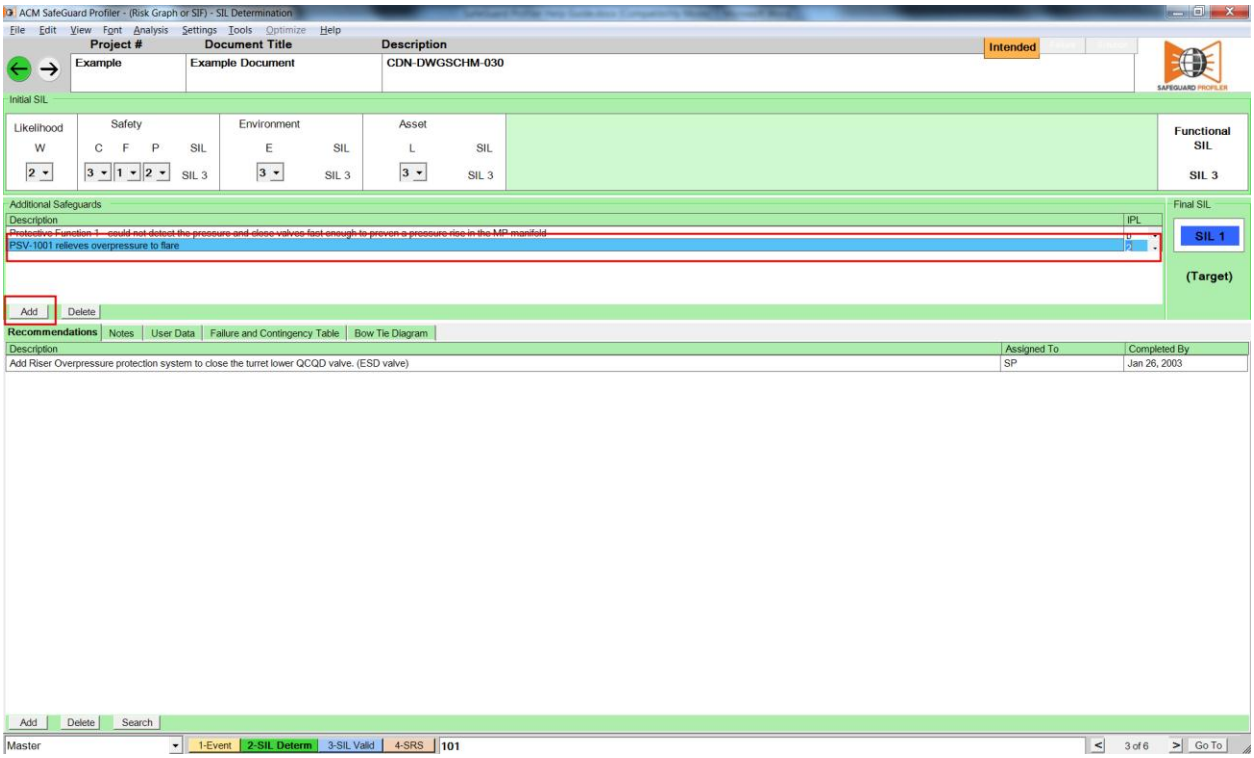
1.4. Crediting Additional Safeguards

SafeGuard Profiler™ allows you to credit additional safeguards for SIF loops.

Click “Add” at the bottom of the “Additional Safeguards” section.

Enter a description and select an Independent Protection Layer (IPL) value from the dropdown list.

For example, to credit a properly sized and maintained PSV as having a PFD in the SIL 2 range, select “2” for IPL.



By crediting the PSV, the loop’s target SIL value has been reduced, making it an effective safeguard.

In this example, the PFD now needs to be in the SIL 1 range, rather than SIL 3.

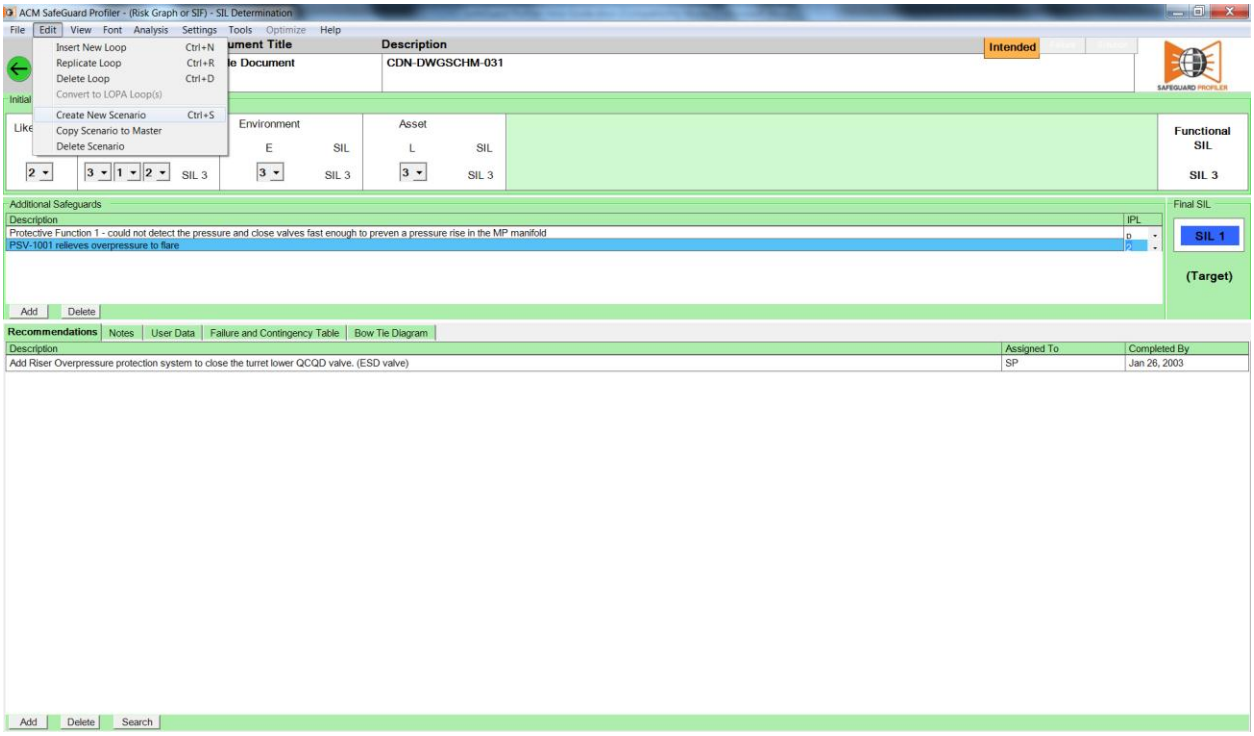
2. Risk Graph – Alternate Scenarios

2.1. The Alternate Scenario Concept

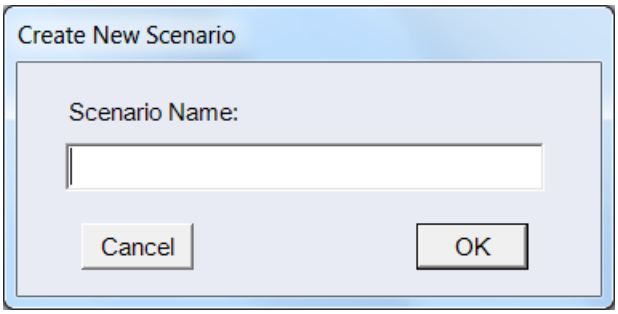
SafeGuard Profiler™ allows you to examine alternate scenarios for a particular loop. If there were some doubt about the likelihood of the demand, an alternate scenario can be created to examine the effects of a different likelihood.

2.2. Creating a Scenario

On the “Determination” page of a SIF loop, open “Edit > Create New Scenario” from the top menu. Alternately, select “Create New Scenario” from the Scenario dropdown list at the bottom left of the page.



Enter a Scenario name (e.g. “Likelihood”) and click OK.



The Scenario dropdown list at the bottom left of the page will now reflect “Likelihood” instead of “Master.”

You can now make changes to this Scenario. For example, in the “Initial SIL” section, update the “Likelihood – W” value to 3.

Changing the likelihood to a more stringent value means that the target SIL for the loop also changes to a more stringent value.