

This short guide will show you how to begin to draw Event Trees using Logidraw.

We describe the events and the outcomes that occur when a level control fails. There are two event levels – one for the hardware and one for the operator - with one event in each level each of which has two outcomes.

Within seconds from now you will have learned how to draw the Event Tree below: -

		Alarm Hardware	Operator response to Alarm	Outcomes Value	Description
Failure of Level Control	0.10/Yr	High Level Alarm operates (0.90)	Operator stops flow to tank (0.80)	0.072 / Yr	No Overflow
			Flow to tank not stopped by operator (0.20)	0.018 / Yr	Overflow Occurs
		High Level Alarm in failed state (0.10)		0.010 / Yr	Overflow Occurs

Okay start Logidraw.

1. Click on **Start | Programs | PEL | Logidraw**. After the splash screen disappears, click **Create Event Tree** and when the Event Tree Project window appears enter the title as **60 Second Guide** and click **OK**.

The first thing to do is to create the Initiator Event

2. Click on the window to add the Initiator Event and then enter the event name as **Failure of Level Control**.

*Next we need to specify outcomes. By default each new event has 2 outcomes named **S** (success) and **F** (failure) each with a probability of 50%. We need to rename the outcomes and specify new probabilities*

3. **Double-click** on **S(0.5)** in the Outcome list and rename the outcome to **High Level Alarm operates**. Set the probability as **0.9** and click **OK**. Repeat for outcome **F(0.5)** renaming it to **High Level Alarm in failed state** with a probability of **0.1** and click **OK**.

To complete the input for the Initiator Event we need to specify a frequency of 0.1 per year

4. Keeping the Input Value Type as **Frequency**, type **0.1** into Value and select **yr** from the pull-down list for Units. Finally click **OK**.

Now we need to give this level of the event tree a meaningful name

5. **Double-click** on the heading **Level 1** and rename it to **Alarm Hardware**.

We now have the Initiator Event with the first event level. Next we need to add the second level of events.

6. **Click** on the first outcome. The event and its outcomes are highlighted **blue** and the selected outcome also has **blue handles** on it. **Right-mouse click** on this outcome (the blue horizontal line - not the handles) and from the popup menu select the last item **Attach Event to Outcome**.

This will create two further outcomes that we again need to rename and reset their probabilities.

7. Edit the outcome S (0.5) and rename it to **Operator stops flow to tank**; set the probability to **0.8**. Repeat for outcome F(0.5) renaming it to **Flow to tank not stopped by operator** with a probability of **0.2**.

Now we need to promote the second outcome of the event in the first level to the final outcome column.

8. **Click** the second outcome in the Alarm Hardware column to give it **blue handles** then **right-mouse click** and from the popup menu select **Promote to Outcome Column**. This will extend the outcome to the final Outcome column.

Complete this second level of events by renaming the header

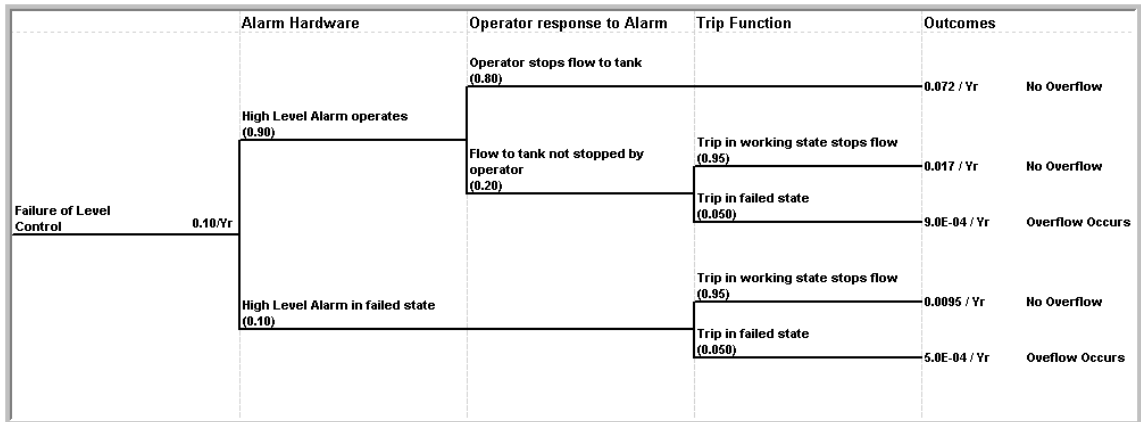
9. **Double-click** on the heading **Level 2** and rename it to **Operator response to Alarm**.

Finally we need to add the final outcome descriptions.

10. **Double-click** on 0.072 in the Outcomes Value column and add the description **No Overflow** and click **OK**. Repeat for the values 0.018, 0.010 and enter **Overflow Occurs** for each description.

We should now have a total frequency that overflow occurs of 0.028/yr.

*And that's it! If you have time try extending the drawing to include a third event level called **Trip Function** as shown below:*



11. First attach a new event to the outcome **Flow to tank not stopped by operator** with two new outcomes (a) **Trip in working state stops flow** with a probability of **0.95** and (b) **Trip in failed state** with a probability of **0.05**.
12. Next, attach a new event to the outcome **High Level Alarm in failed state** again with two outcomes (a) **Trip in working state stops flow** with a probability of **0.95** and (b) **Trip in failed state** with a probability of **0.05**.
13. Next, promote the outcome **Operator stops flow to tank** to the final Outcome column.
14. Complete the drawing by renaming the Level 3 header and adding appropriate descriptions to the final Outcomes.
15. Finally, from the **File** menu select **Customise** and set the font size to **10** for the column headings and to **8** for the Outcome text and values.

You should end up with a total frequency that overflow occurs of 0.001/yr.

This program is developed, maintained and supported by PEL Support Services, ABB. We run a Hotline telephone and email service to answer any queries about the PEL products. You can contact us:

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