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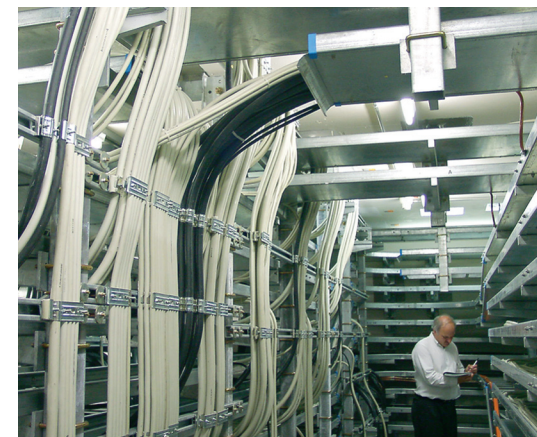
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Reliability & Safety Consulting Engineers, Inc.

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Fire Area Target and Component Analysis Tool (FATCAT)

Providing Plant-Specific Solutions for Managing Risk and Improving Reliability

Fire Area Target and Component Analysis Tool (FATCAT)

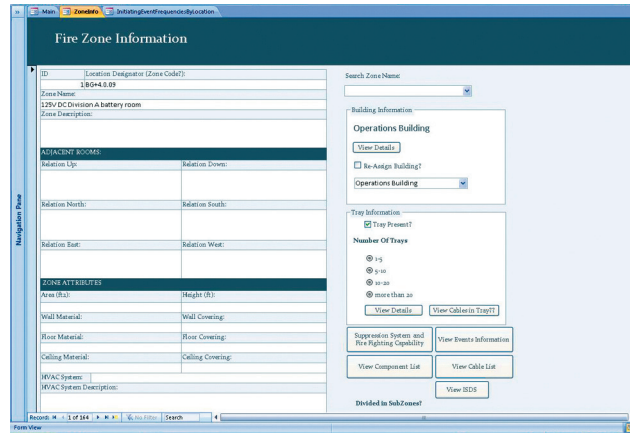
Program Description

The Fire Area Target and Component Analysis Tool (FATCAT) is designed to organize and compile the information needed to perform a detailed internal fire analysis. FATCAT can be used stand alone or in combination with ignition source data sheets (ISDS) or general fire event trees (GFET), to develop plant-specific fire initiating events, fire initiation frequencies, fire zone definitions, component matrices and PRA model dependencies.

FATCAT also creates links between rooms (fire zones) in the plant and the basic (failure) event files of the plant's PRA computer analysis code. This is done by associating potentially damaged equipment or cables in a fire zone with their relevant basic events from the PRA model files.

FATCAT utilizes a Microsoft® Access® platform in which industry and plant-specific fire event information can be used with a screening process to identify critical rooms (fire zones) within a plant and to develop plant-specific fire ignition frequencies and consequential component failures associated with them, which can be input into the plant's PRA code.

FATCAT is designed to accept information from a user-defined industry database. It also allows the user to build a plant-specific database in which plant fire zones and the equipment in them are defined. Plant-specific information regarding buildings and fire zone locations, equipment location and type, cable types and cable routing information can be input by an analyst through a series of windows that are accessed through the user interface window shown above. This plant-specific database is useful for tracing cable



routes, and based on available information will extrapolate routes for cables whose routing is not known.

With the above information, the user may focus the analysis by screening from further consideration fire zones with no PRA related equipment or cables.

FATCAT or the ISDSs may be used to determine fire ignition frequencies and severity factors for the fire zones remaining after the first screening. Having done this, the user can apply a second screen to eliminate fire zones with a fire ignition frequency that is below a selected screening value.

The fire ignition frequencies for the remaining fire zones can be further refined by using an RSC-developed GFET. Unsuccessful GFET end states (e.g., fires that are unsuppressed) are combined to produce a fire initiating event frequency. The user may apply a third screen, based on a selected value for initiating event frequency, at this time. Fire initiating events are developed for the fire zones that remain after the third screening, along with the likelihood of fire propagation and a list of consequential failures associated with each fire initiating event.

Input and Output

During the initial setup of FATCAT, generic (industry) fire information is input by an RSC analyst. As described previously, plant-specific information may then be input by an analyst through a series of user interface windows. These windows make extensive use of drop boxes to help simplify analyst input and to make the input consistent among the windows.

FATCAT output is provided in several tables and windows, some of which are listed below:

- Fire Zone Equipment Listing—describes and provides a count of the equipment and equipment types contained in a selected fire zone. This information can be used to identify potential fire targets associated with a fire in the zone.
- Fire Zone Cable Count Listing—contains information about the cables passing through a fire zone and lists the number of zones through which each cable passes. This information is used in verifying cable routing information and in calculating the split fraction contribution of each cable to the fire zone.
- Fire Zone Basic Event Listing—provides the PRA model's basic event names for the equipment in a zone and for the cables passing through a fire zone. This information is used to identify consequential equipment failures (throughout the plant) caused by a fire in the fire zone.
- ISDS Zone Information Window—displays the information FATCAT provides for a fire zone's ISDS. This includes the equipment and cable counts that are used for calculating the fire ignition frequency for the fire zone.