CASS L2_LASAR FEP PARSING

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Background

The L2_LASAR Functional Extension Program (FEP) is used to run L200 programs that were developed using LASAR in the CASS environment. The FEP will initiate the L200 from the ATLAS environment. After the L200 process is is completed, a diagnostics file is generated. This information is parsed by the FEP and returned to ATLAS to display component callouts. The information passed consist of two (2) variables, PCOF (Primary Cause of Failure) and ACOF (Alternate Cause of Failure) and displayed to the TPS user using an ATLAS display.

Problem Description

The FEP sometimes parses the diagnostic data into the wrong variables (PCOF and ACOF). For example, if a circuit node with U7 pin 4 driving U3 pin 7 and U4 pin 3, happens to have an "Open" fault in U3 pin 7, the callout will have zero (0) components in PCOF and 1 component in ACOF, U3 (this is assuming that the diagnostic file only has 1 component). This component should be in the PCOF list and not in the ACOF list. A similar problem arises in the case of a primary pin being the faulty component, the PCOF will be zero and all components of the diagnostic will be in the ACOF list (including the primary pin). Although this problem does not affect the TPS requirements and does not ignore data, it could lead to misinterpretation of the faulty component, especially if the ACOF list has several components.

On a typical node (see figure 1a) a "Stuck at" fault will be interpreted correctly. In the example of Figure 1, the type of fault and node, will generate the correct information for PCOF (U1) and ACOF (U2 and U3, figure 1b).

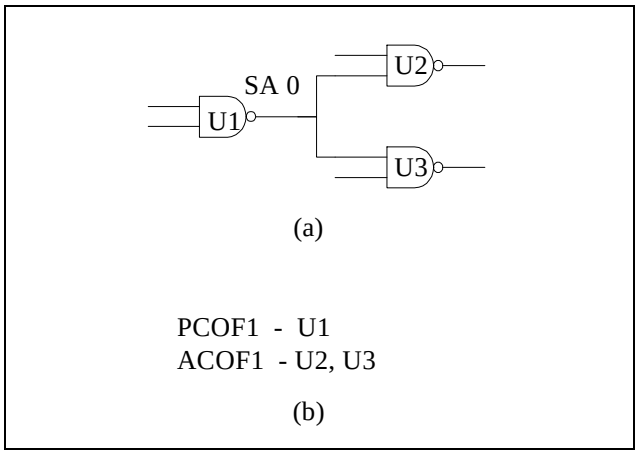

Figure 1

On a node with a primary input fault or an OPEN fault (see Figure 2a), the PCOF will be zero and the ACOF will contain all the components of the node(see figure 2b). This is an example of the wrong assingment of the PCOF and

ACOF variables. The correct call for PCOF should be U6, and for ACOF should have none (see figure 2c). If we look at the LASAR Lexicon file we should see that the callouts will be more in the line with the PCOF and ACOF.

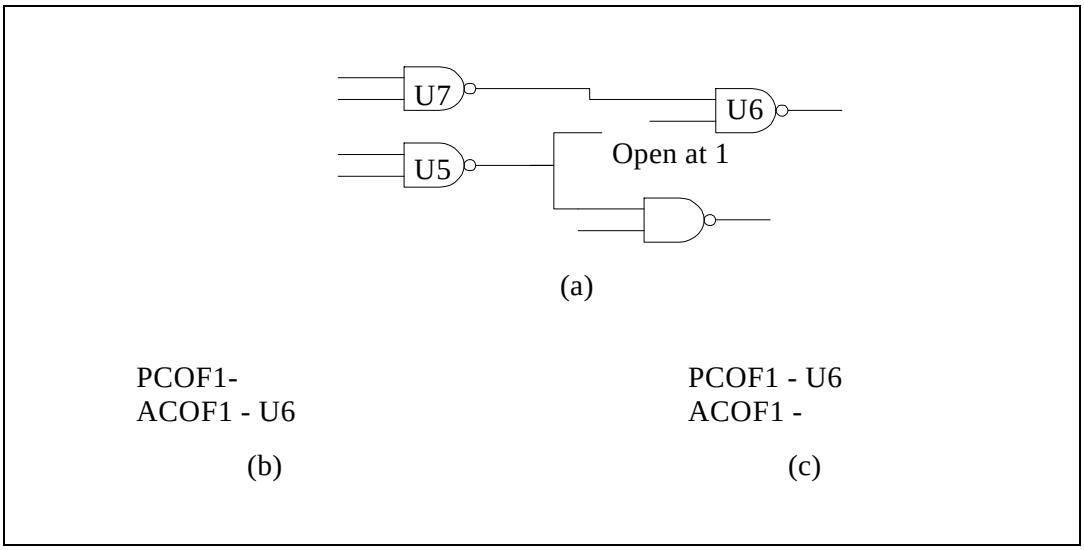

Figure 2

The basic problem arise when the L2_LASAR FEP parses the diagnostic data. The components that are listed in the PCOF list are the components that are in the "Driven by" list in the diagnostic data (see figure 3). In diagnostic file at figure 3 the first faultset should have callout as PCOF1 the primary pin called B02, instead it has no components on the PCOF1 and ACOF1 has all the components (B02 and U01). In the second faultset will have the correct values for the PCOF2 and ACOF2.

Solution

The solution to this problem can be easily achieved by analyzing data provided in the diagnostic file, instead of just parsing the information. The analysis of the data will provide information to correctly assign the component to the right variable. This analysis will

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FAULT DICTIONARY DIAGNOSIS

POSSIBLE FAULTS IN SCENARIO ST

>> EXACT MATCH <<

Node 6 is stuck at high

NODE    6  NAME BIIID  PIN B02

Fanout to - IC_U01_4

Possible open at - IC_U01_4, pin B02


>> Mismatch value = 9 <<

Node 404 is stuck at high

NODE  404  NAME BULKM01

Driven by - [IC_U01_14]

Fanout to IC_U09_6

Possible open at - IC_U09_6, IC_U01_14

CFAIL = -1
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Example of the diagnostic file
Figure 3

consider data like: the type of fault and the node interconnectivity which are provided. This information is in the diagnostic file created by the L2_LASAR FEP called DIAGXXXXX.DAT (figure 3), where the XXXXXX are group of numbers based on the time of day the file was created. The process will not add or delete any components from the list, it will just rearrange them to be more in line with the diagnostic. This will benefit the user trying to repair the board by pointing out to the most probable cause of the failure. This will potentially reduce the number of components that have to be replaced and save time.