



Best Practices In Failure Reporting, Analysis, and Corrective Action

Typically in DOD acquisition the use of failure reporting, analysis, and corrective action processes are fragmented and not in alignment across the Government and Industry enterprise. Processes normally used include Failure Reporting and Corrective Action System (FRACAS), Failure Review Board (FRB), and Corrective Action Board (CAB). FRACAS is a closed-loop system that ensures all failure reports have been reviewed, assessed, and any corrective actions implemented. It has been found that the use of a separate FRB, interlinked with the FRACAS process, can be used to ensure the FRACAS process is operating optimally. Figure 1, below, illustrates how the FRB (in the center) is interconnected with FRACAS and how this relationship can enhance the performance of FRACAS.

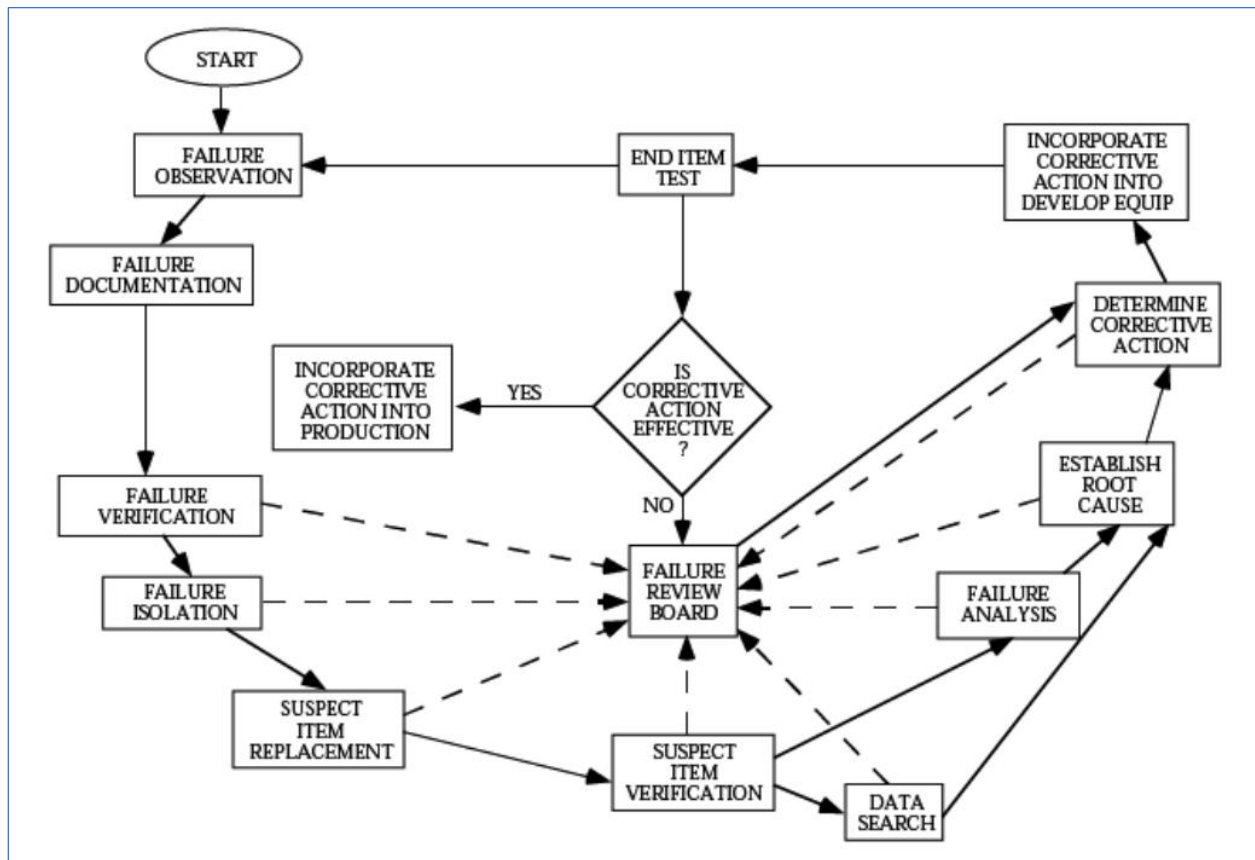


Figure 1: CLOSED LOOP FAILURE REPORTING AND CORRECTIVE ACTION SYSTEM

FRACAS is a Systems Engineering function that draws on the Test, Engineering, Design, and Manufacturing organizations. The FRB usually consists of higher level management possessing



authority to set priorities, establish schedules, assign responsibility, and authorize funding to drive fixes to completion. The Government acquiring activity usually reserves the right to appoint a representative to the FRB.

Best Practice:

- Failure Reporting, Analysis, and Corrective Action System (FRACAS) implementation is consistent among the Government, prime contractor and subcontractors
- FRACAS is implemented from the part level through the system level throughout the system's life cycle and managed by the Systems Engineering Organization
- Criticality of failures is prioritized in accordance with their individual impact on operational performance
- All failures are analyzed to sufficient depth to identify the underlying failure causes and necessary corrective actions
- Subcontractor failures and corrective actions are reported to the prime
- Prime contractor is involved in subcontractor closeout of critical failures
- Failure database accessible by customer, prime contractor and subcontractors
- Failure Review Board is composed of technical experts from each functional area
- Test requirements established for Retest-OK/Can-Not-Duplicate (RTOK/CND) failures

Metrics Include:

- 100% of failures undergo engineering analysis
- 100% of critical failures undergo laboratory analysis
- Failure analysis and proposed corrective action are completed:
 - < 15 days for in-house analysis
 - < 30 days for outsourced analysis
- Feedback from the field to the factory should be in < 30 days

Watch Out For:

- Deferring FRACAS to the production phase
- No time limit for failure analysis and closeout
- Verification of corrective action not part of failure closeout
- Failures classified as random are not analyzed
- Failure analysis required only when repetitive failures occur
- Pattern of RTOK/CND failures
- Exclusion of test equipment, GFE and COTS/NDI failures from FRACAS
- Engineering and lab analysis not considering:
 - History of previous failures
 - Related circuit part failures
 - Temperature and other environmental conditions at failure
 - Workmanship precipitated failures correctable by design changes



"Understanding the Future Effects of Today's Decisions"

- RF and other high energy part failures often results from test setup difficulties
- Backlog of failures to be analyzed in the laboratory • Failure Review Board (FRB) and Quality Review Board (QRB) not integrated to review effectiveness of both functional and non-functional failures • Failure closeouts dependent on FRB/QRB decisions

To learn how WILLCOR can help you improve your FRACAS process, please contact Brian Willoughby at brian@willcor.com for more information.