Human Performance Breakdowns are Rarely Accidents; They Are Usually Very Poor Choices With Disastrous Results.

Dr. Robert O. Besco, Captain, AAL, Retired
Professional Performance Improvement Company
3131 Maple Avenue, Suite 7C
Dallas, TX 75201
Phone: 214-468-0830
bbeesco@ppi.aero · www.ppi.aero

Abstract
When human error is involved in the error chain of accidents in complex systems, the causes of the errors are very seldom the result of;
1. a single, random slip,
2. inadvertent oversight,
3. unintended action,
4. mis-perceived event,
5. mal-performance of a complex action, or
6. poor training programs for the human operators.

Invariably, the errors or performance break downs are caused by very poor deliberate choices from either one or several of the following: 1) operators, 2) system designers, 3) supervision, 4) management and 3) the entire hierarchy of leadership. Usually the operator bears the burden of blame and is either replaced or retrained. In complex systems, such as commercial aviation, high-tech manufacturing systems, power plants, process control systems, information processing systems and communications networks, the replacement or retraining of individuals or even classes of individuals usually does not result in any long term improvement of the safety or effectiveness of the system.

What is needed is a system that identifies 1) the reasons why operators make errors and 2) the solutions to improve future performance within the system. The Professional Performance Analysis System (PPAS) has been applied to more than 50 major aircraft accidents in the past thirty years. The PPAS is a direct outgrowth of the human performance analysis system developed by Robert Mager over 45 years ago.

The PPAS starts with the complete and unbiased definition and description of the events of the accident or incident as developed by the teams of accident investigation and reconstruction professionals, in aviation the NTSB. The PPAS then applies a systematic protocol and algorithm to determine the reasons why the humans committed the errors or why they performed at subnormal performance levels. This process is based on quantitative behavioral science principles and findings that demonstrate the quantitative psychophysical principals validated from the 19th century up through current behavioral science research.
The PPAS looks at five attributes of human performance to identify factors that improve performance in the future. The result is a series of objective change definitions that have been proven over generations of quantitative research on human performance to be attributes that influence human performance.

The PPAS enables an analyst, with only limited education and experience in quantitative behavioral sciences, to arrive at recommendations that are based on validated human performance principles that are proven to be successful at changing human performance in complex system and high-tech process operations.