Tell Me Why

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Abstract

Engineers usually do an excellent job of documenting WHAT they build – the plant drawings and specifications record in excruciating detail the materials of construction, temperature and pressure ratings, size of pipes and equipment, equipment layout, piping and equipment interconnections, and all other information required to construct and operate a plant. However, the design basis – the WHY of the plant design – often is not nearly so well documented. Understanding the design basis of the plant, particularly with regard to the safety features, devices, and procedures, is as important, or perhaps more important, understanding the exact specifications of the equipment for the long term safe operation of the plant. Sometimes the reason for critical safety features, particularly inherently safer design features, may not be apparent to people who were not involved in the original design. These features may be vulnerable to compromise or elimination in future modifications of the plant because the people running the plant at the time the modifications are made do not remember the original design basis. This can also work in the opposite sense – a plant may continue to accept and manage certain hazards long after the original reason for designing the plant to operate in that way has been eliminated, because it has “always been done that way.”

Several case studies and examples illustrating these points will be discussed.