



Development of Enhanced Statistical Analysis Capabilities of Performance Demonstration Qualification Data

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Performance Demonstration



Overview

- Project Description
- Background
- Past Applications
- Project Scope
- Capabilities
- Summary



Project Description

- Duration
 - 2 Year Project
 - 183K 2005
 - 159K 2006
- Background
 - The PDI program has the worlds largest databases on ultrasonic performance
 - These databases are not designed to perform efficient queries and the current process is cumbersome and has the potential to produce ambiguous results
- Scope
 - Convert present databases into a more usable format
 - Add needed fields to converted databases
 - Design standard queries
 - Design Specialized query builder to allow custom queries
 - Clean the current data and establish quality controls to assure the accuracy of information is maintained
- Purpose
 - The need to perform statistical analysis on this data has become more important in supporting current industry materials programs such as MRP, BWRVIP and MTAG. The goal of this project is to provide accurate statistical data in an easy to access format that will allow the industry to benefit from this large set of available data.



Background

- PDI Databases
 - The PDI databases were designed to store candidate grading results and to assist users in maintaining compliance
 - Statistics were an after thought
 - Databases were not designed to promote efficient data mining abilities
 - Present process for extracting statistical information is limited and potentially prone to errors
 - Data needs to be reviewed and “groomed” to assure accurate data can be produced
 - Databases are over 10 years old and require updating in order to efficiently query data



Past Applications

- Past Applications
 - This data was used extensively in several applications
 - Justification of the reductions of low value examinations
 - Nozzle Inner Radius
 - Elimination of the examination of circumferential welds in BWR reactors
 - Appendix L
 - Component life extensions
 - Technical justifications to support present procedures
 - Technical justifications to support changes in the code acceptance criteria
 - Various Risk Based Projects
 - In all cases extensive amount of man-hours were expended to verify all data outputs, this is becoming more and more time consuming



Project Scope

- 2005
 - Develop RFP&Q and issue contract for consultant
 - Design structure of databases
 - Upgrade present hardware and software
 - Perform quality checks on data
 - Design front end of databases
 - Import data into new databases
 - Design standard queries for DM weld configurations
 - Design query builder to allow for customized queries
 - Design reports and put into production
- 2006
 - Perform steps 5 through 9 with existing piping data



Capabilities

- At the completion of the project the following capabilities will exist
 - Easy evaluation of pass rates for various types of qualifications sorted by 1st, 2nd and 3rd attempts
 - Evaluation of overall performance sorted in numerous ways
 - Passed/Failed
 - Evaluation of performance for specific procedures
 - Manual verses automated
 - Data will be able to sorted to evaluate the effect of a specific variable or a combination of variables
 - Configuration
 - Access condition
 - Material type
 - Flaw mechanism
 - Flaw orientation
 - Weld crown condition
 - Flaw location



Progress

- Project Approved by NDEC Steering Committee 11/2004
- Contract has been awarded and work in underway
- EPRI is making every effort to address NRC requests, but some fields will not be filled due to budget constraints



Summary

- This database will be an invaluable tool that will assist the industry to effectively manage ongoing dissimilar metal weld issues and is tied to many on going projects
- Imperative to the success of ongoing material initiatives

