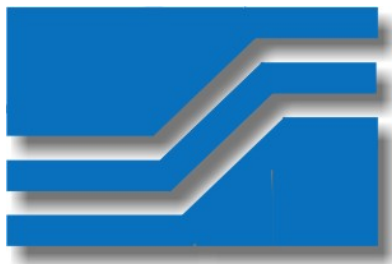




Mechanical Damage Technical Workshop

Mechanical Damage Characterization (Technology Research)

Wednesday, March 1, 2006



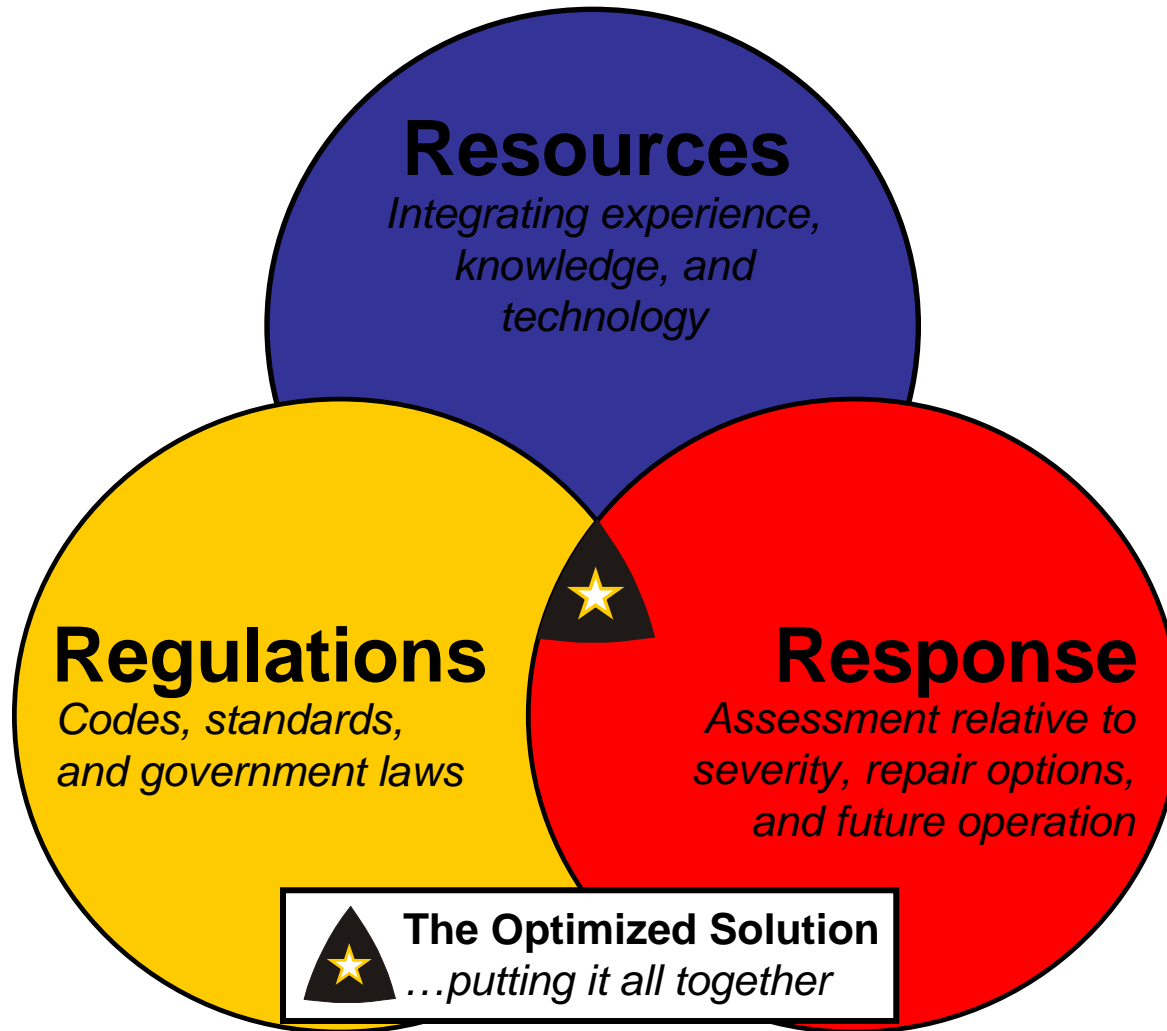
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Laying the Groundwork

In terms of mechanical damage, the key to operating pipelines in the future is to properly integrate **experience and technology** to effectively assess damage as it is found. When this is done, the pipeline community can respond appropriately and continue the safe operation of pipelines.



The Key Components



Points to Consider

- In terms of characterization, the *sweet spot* exists in balancing between the following “call” levels:
 - **too few**: dangerous due to potential failure levels
 - **too many**: expensive and generates a false sense of alarm
- Defect characterization often involves developing an appropriate priority level to *rank* the severity of defects



Pipeline Truths

- Pipelines are an integral part of our national and international infrastructures
- Pipeline failures can result in significant loss of life and property
- Mechanical damage is a leading cause of pipeline failures in the United States
- A significant body of work exists in terms of assessing mechanical damage



The Assessment Process



Finding the defects
(inspection technology)



Assessing the severity
(experience, operating history, testing, analysis, and research)



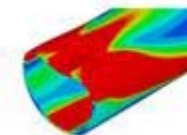
Defining acceptability (rank defects if required)
(evaluation relative to codes, standards, and government regulations)



Repairing the damage (if required)
(use available technology to determine the best repair options)



Continue operation
(restore service once integrity has been reestablished)



Current Challenges

- Getting technology into the hands of those who need it (and can use it)
- Provide *results-oriented* solutions to operators in assessing and characterizing damage
- Establish greater communication exchanges between researchers, service companies, regulators, and operators
- Use technology when appropriate, but not as a substitute for experience or at the expense of safety



Closing Comments

- The fact we are talking about mechanical damage is a big part of the solution
- We need to keep the **needs of the operator** at the forefront of what we are doing so they can continue to operate safe pipelines
- The eventual goal should be to develop a seamless process from inspection to repair that integrates experience with technology

