



SETTING THE STANDARD

NDT Personnel Certification- Employer/Independent/Accreditation What is Different About ASME ANDE-1

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Employer Based Certification In a Perfect World

- Employer Responsible to provide Training and Experience as Applicable to the Companies Products and Services
- Employer Responsible for Written and Practical Examination
- Employer Certifies Employee
- Employer Certification is Non-Transportable
- Employer Totally Responsible for Employee Performance

Employer Based Certification In the Real World

- Implementation varies from Employer to Employer
- Training-Minimum hours only required, No Std, Typically No Industry Evaluation, No Accreditation
- Experience-Time Based Only, No Criteria or Guidance provided,
- Written Examinations-Only Minimum # of Questions Req'd, No Std Level of Difficulty, No Way to Evaluate Effectiveness and Quality of either written or practical exam
- Practical-Costly for each employer with limited sample sets, typically does not address fabrication and in-service conditions expected in the field
- No Effective way to incorporate operating experience (OE) into decentralized process
- No way to address individual performance issues to retrain/retest/recertify

What is the Affect on the End User?

- Performance Issues
- Associated costs
(failures/rework/outages/legal)
- Low Confidence in Process
- Search for a New Solution (industry organized or unorganized)
- Performance Demonstrations/Independent Cert./Accreditation

Independent Certification

- May or May Not Address the Employers Specific Needs
- Multiply National and International Schemes Complicated to End User
- Cost/Performance/Applicability Issues
- Slow to React to Changing Technology and Industrial Needs
- Responsibilities Not Always Clear

Accreditation

- Is It Effective, Add Value?
- May Be Industry Specific With High Responsibility to Assure Quality and Safety
- Or There May be Multiply Accreditation Processes Available and Complicated for End Users Concerning Performance Improvement
- Responsibilities Not Always Clear

Why ANDE-1?

NDE Issues Overview

- Decline in qualified workforce due to attrition
- Increasing demand due to aging plant issues and competing industries
- Variations in employer based qualification and certification
- Human performance issues
- Existing PQ&C processes do not align with best practices used in nuclear, military and other industries.

NDE Performance Issues History

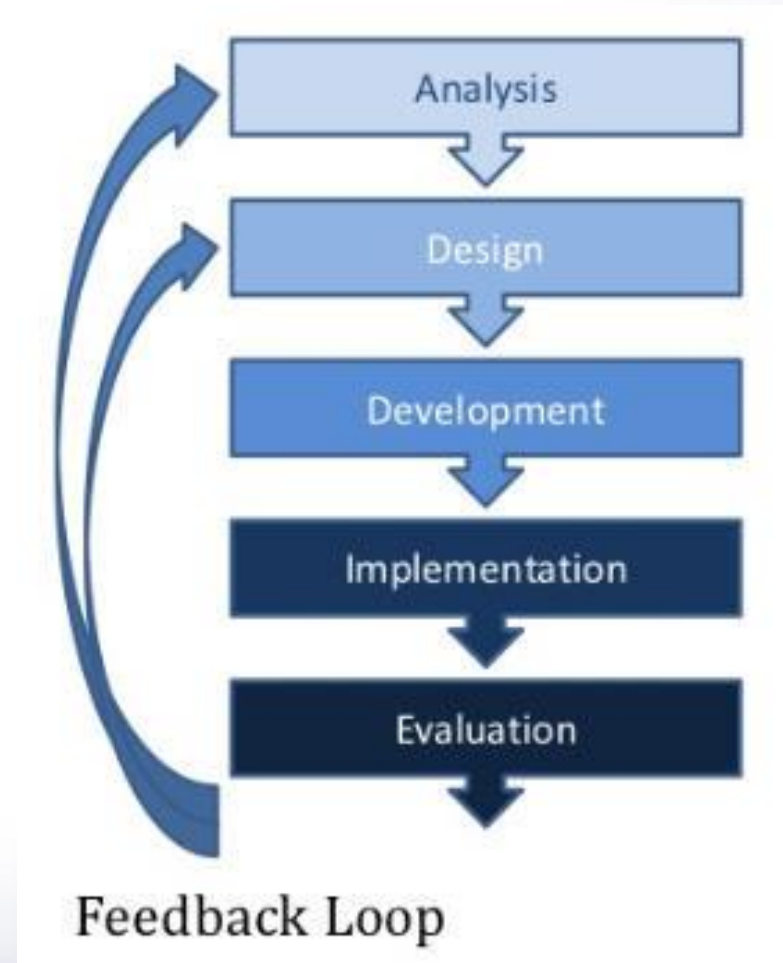
- 2008 EPRI Report 1016969 summarizes 30 years of round-robin studies and performance demonstration results, identifies common performance weaknesses and root cause.
- January 10, 2017 NRC Expert Panel Report was made publicly available on the NRC web site ADAMS at Accession Number ML 16306A347.
 - Report concludes that pass rates for experienced certified personnel is rarely above 50% on the first attempt for demonstration test that simulate field examinations.
 - Passing performance demonstration testing alone is not sufficient to ensure reliable examinations.
 - These data on qualification and requalification strongly suggest that improvements in training, skills maintenance, practice and/or continued education are needed.

So What Makes ANDE-1 Different?

Systematic Approach to Training

SAT Process – Five Phases

1. Analysis
2. Design
3. Development
4. Implementation
5. Evaluation



Job Task Analysis

- Defines the Specific Tasks to Perform a Particular NDE Method
- Identifies the Required Skills and Knowledge necessary to Perform Each Task
- A Mature, Proven Process Only Recently Introduced to NDE thru ANDE-1

ANDE Program

Sample of ANDE Ultrasonic JTA

JOB/TASK ANALYSIS ULTRASONIC

Duty Code: 100		Job Duty Area: Ultrasonic (Basic)					Date: 08/15/2013	
Task ID Number: 1.0		Task Description: Review Historical Documentation						
Element No.:	Performance Steps (Elements)	*D	*I	*F	S	K	Skill (S) Knowledge (K)	Level I II or III
1.01	Inservice - Obtain data If documentation does not exist-obtain weld profile of the applicable component FAB/Construction – Receive instruction on examination requirements from Traveler/Process Sheet	2	2	2	S	K	Ability to understand required data How to obtain weld profiles	I, II
1.02	Verify data is for applicable component Refer to supervisor/job coordinator if discrepancies exist	2	4	2	S	K	Comparison of data against assigned component	I, II
1.03	Review Technique	3	4	2		K	Understand ultrasound theory and techniques	I, II
1.03A	Compare previous technique to current requirements	2	5	4		K	Ability to distinguish new requirements	I, II
1.03B	Determine impingement angles/Review procedure	4	5	5	S	K	Understand the purpose/requirement of impingement angles Ability to perform calculations (geometry and trigonometry)	I, II
1.04	Review Coverage Limitations	3	5	5		K	Comprehension of UT theory (geometry, trigonometry, algebra) Understanding the requirements for coverage calculations	I, II
1.04A	Determine component configuration	2	5	5		K	Understanding process pipe and component installations	I, II
1.04B	Ascertain if configuration/assembly of adjacent components interfere with examination	2	5	5	S		Capability to determine potential component restrictions based on technique and incident angle to be utilized	I, II

*DIF Determination (see attached definition and numerical rating)

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Qualification Cards (Experience)

- Current prescriptive on-the-job (OJT) training/experience does not provide performance measurement for meaningful learning opportunities
- Time based only and does not recognize training effectiveness and learning abilities
- Effective feedback when detecting and evaluating actual flaws is seldom provided since they are rarely encountered.
- Varying knowledge and skill of mentors

Qual Cards (continued)

- Qualification cards are used to specifically identify the essential elements of each task
- Provides a process to demonstrate skills proficiency at a specified performance level, time is not a factor
- Field OJT is structured and, where applicable, complemented by structured laboratory experiences.
- Timely and effective feedback is provided and assessed by an experienced and knowledgeable mentor.

ANDE UT Qualification Card

• UT Carbon Steel Pipe-to-Pipe, Page 2 of 23

QUALIFICATION CARD

CANDIDATE: _____ ID: _____

METHOD: Ultrasonic (Basic) JOB DUTY/ ENDORSEMENT AREA: Job Duty Area: Pre – examination
Carbon Steel 6" or 12" Pipe to Pipe

ACTIVITY TITLE: Inspection Request/Component Information

Applicable Procedures, Drawings and/or Reference Documents:

Need to add reference documents

TASK ELEMENT NO*	ACTIVITY	Action Code	Candidate Initials/ Date	Level II & III Initials /Date	COMMENTS / REMARKS
	TASK: Obtain Component Information • <u>Pipe to Pipe (6" or 12" diameter)</u>				Qual card for each component configuration for a total of nine if candidate completes all activities.
1.01, 1.02	<u>Assignment Sheet:</u> Review: request, work order document(s), component specifics (configuration, material type and thickness, limitations, etc.), Code requirements, applicable drawings.	P			Will require a typical assignment sheet/ work request document. Component configuration drawing
2.05	<u>Select/Review ultrasonic procedure:</u> Ensure: applicable code requirements, scope vs. component to be examined, etc.	P			Need procedures for each component configuration

* See JTA "Ultrasonic Basic" for identified elements and the associated skills and knowledge.

I have received adequate experience for the task as listed above and can perform this task in a proficient manner.

Candidate: _____ Date: _____

I have evaluated the subject Candidate in the above task and the performance results are acceptable.

Final Evaluator: _____ Evaluation Action Code(s) _____ Date: _____

Action Code (P) Perform (S) Simulate (D) Discuss

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ANDE Program

The ANDE Program provides a new and unique approach to NDE and QC personnel qualification as compared to currently used national and international schemes and requires an **Industry Sector Specific (SIS)** committee to assure sector specific applications and issues are addressed.

It implements the most effective currently known elements, including:

- Systematic Approach to Training (SAT)
- Detailed Job Task Analysis (JTA)
- Defining Experience Requirements (Qualification Cards)
- Independent, psychometrically validated third-party written and practical qualification examinations

ME

SETTING THE STANDARD



**“To Me It Seems That All Sciences
Are Vain And Full of Errors That Are
Not Born of Experience, Mother of
all Certainty”**

**Leonardo Da Vinci
(1452-1519)**



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